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ABSTRACT

Mercer County Community College (New Jersey) and six small businesses used federal grant money to develop a model program of workplace literacy that would assist 600 adult workers with inadequate basic skills in performing their jobs. In analyzing the overall skills of the work force, the literacy audit identified these basic skills/literacy deficiencies: oral and written communication within the organizations, limited English proficiency, basic literacy skills, logical/rational thinking skills, and workplace sensitivity and other interpersonal skills. The evaluation design consisted of performance evaluation measures monitoring, impact surveys, student information, and summary evaluation. Curriculum development began with the literacy audit that included use of the DACUM (Developing a Curriculum) process. An orientation and assessment program was conducted. Six training cycles were conducted at the facilities. The evaluation showed that benefits for the six companies included the following: increased self-esteem; a better informed, more participatory employee; improved communication skills; increased occupational mobility and career opportunity; and improved employee and work site safety records. Results of a student survey strongly supported employees' satisfaction with a work-based education program geared for their needs. (Appendixes and attachments include a third-party evaluation, curriculum overview, course outlines, sample training schedule, surveys, and four DACUM charts.) (YLB)

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ED 388 780

MERCER COUNTY
COMMUNITY
COLLEGE

TRENTON • NEW JERSEY

Mercer County Community College
National Workplace Literacy Program
Grant Period:
November 1, 1993 - August 31, 1995

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MERCER COUNTY COMMUNITY COLLEGE

NATIONAL WORKPLACE LITERACY PROGRAM

Grant Period: November 1, 1993 - August 31, 1995

FINAL EVALUATION

Project Number VA198A30142-93
Funded by the US Department of Education

SUMMARY SHEET

1.	PROGRAM TITLE:	Workplace Literacy and English Language Skills for New Jersey Small Businesses
2.	AWARD NUMBER:	VA198A30142-93
3.	PROJECT DIRECTOR AWARDEE/ADDRESS/ TELEPHONE:	Elaine S. Weinberg Mercer County Community College 1200 Old Trenton Road Trenton, NJ 08690-1099 (609)586-4800 EXT. 612 Fax - (609) 890-6338
4.	FUNDS BY FISCAL YEAR:	Federal: FY 1993 $576,539 Non-Federal $364,600 Federal Funds - 30% of total funds
5.	AWARD PERIOD:	November 1, 1993 - April 30, 1995 and extended to August 31, 1995
6.	FEDERAL PROJECT OFFICER:	Elizabeth Miller (202) 732-2357
7.	OBJECTIVE:	To develop workplace literacy competency and English language proficiency among workers in small manufacturing and service organizations.
8..	PROCEDURES:	Employees in various positions in six small companies enrolled in classes targeted to provide higher skill levels in English communication and basic skills needed to increase efficiency in their growing companies. The curriculum was designed to help the workforce communicate with each other in English, to make judgments and find solutions to job problems that were once only handled by upper management.
9.	OUTCOMES AND RESULTS:	Workers learned job functional skills that have helped increase their accuracy and communication within the company. Course modules were developed to instruct workers in service and manufacturing environments to read, write and calculate more accurately in job-related situations. Employees improved English communication skills on the job, and benefited from increased self esteem, improved understanding of work assignments and job coping skills.
10.	EDUCATIONAL LEVEL:	Ranged from ABE through 12+
11.	TARGET POPULATIONS:	Specific job categories within each company

12.	EXPECTED NUMBER OF TRAINEES:	900
13.	PARTNERS:	Hann & DePalmer; M. Grumbacher, Inc.; McLean Engineering; Rhein Chemie Corp.; Saddat Associates, Inc.; Setco, Inc.

Project Abstract

As partners, Mercer County Community College, Hann and DePalmer, M. Grumbacher, Inc. and Rhein Chemie sought federal funds to assist in the development of a model program of workplace literacy that would assist 900-1200 adult workers who had inadequate basic skills to perform their jobs and were ineligible for career advancement due to lack of these skills. Once the grant was obtained, three companies joined the project. These three companies and the three additional small businesses that were added to the project all have less than 200 staff in their organization with total staff of under 700. Therefore the projected number of students was reduced to 600.

Each partner made a significant contribution to the program and was committed to the ongoing success of the project. As both service and manufacturing industries moved towards technology in the application of their work the necessity of the development of a workforce with strong skills and high levels of functional literacy became critical. In a region where there is a dramatic downsizing of manufacturing organizations, it became apparent that the economic vitality of the companies depended upon adult workers who had the functional literacy to meet the challenges of the rising demands for literacy-based job skills.

The need for the program was great. Because the participants had diverse literacy needs the college to developed a contextual approach to literacy that related basic studies to tasks at work. The project directly related to literacy requirements and actual jobs at the sites. By establishing a partnership among an educational institution, service industries and manufactures of art supplies, chemical products, electronic cooling equipment and plastics, the project included all the elements that were required to develop a program that could be replicated in a wide range of work places. Curriculum was determined by a literacy audit. A DACUM process was conducted for each job category at each site targeted in the program. An orientation and assessment program was conducted, and with a grant extension, a total of six training cycles were conducted at the facilities.

A strong support services program was provided in conjunction with the instructional workplace literacy program that increased retention. Each employee participant was assessed and an individual educational plan was developed to outline an educational program. Both formative and summative evaluation procedures were used to assess specific program objectives.

Table of Contents

		Page
I.	**Establishing and Maintaining Partnerships**	
	Partnerships	7
	Responsibility of Partners	10
	Advisory Committees	11
	Organizational Procedures	11
II.	**Establishing Relevant Curricula**	
	Audits	13
	Evaluation	14
	Course Outlines	16
	Customized Learning	16
III.	**Public Relations and Recruitment**	
	Presentation to Workers	19
IV.	**Assessment, Placement and Counseling**	
	Assessment Procedures	20
	Counseling	21
V.	**The Faculty and Staff**	
	Staff Training and Development	22
VI.	**Formative Evaluation**	
	Procedures	23
	Performance Evaluation Monitoring Measures	23
	Student Achievement	25
	Student Evaluation	29
	Company Input	46
	Instructor Comments	47
VII.	**Summative Evaluation and Outcomes**	
	Program Goals	49
	Goals and Objective Accomplishments	54
	Supervisor/Management/Evaluation	59
VIII.	**Workplace Barriers**	
	Challenges and Solutions	65

IX. **Dissemination** 66

X. **Month by Month Plan of Operation** 67

XI. **Curricula** 68

XII. **External Evaluation**

Appendices

A. Demographic Profile of Companies
B. Curriculum Overview
C. Course Outlines
D. Orientation Poster
E. Sample Training Schedule
F. Surveys
G. Individual Education Plan (IEP)
H. Company Letters of Support
I. DACUM

I. ESTABLISHING AND MAINTAINING PARTNERSHIPS

The Partnerships

Mercer County Community College began the program with three business partners who were fully committed to making this project a success. Once the grant was approved three more small to mid-sized businesses joined the project. Each organization considered the project a part of a larger effort to link the experience and expertise of the college with the training needs of their industry. With the six companies in the project the college was able to create a model program that could be replicated for most industries in the Central New Jersey economy.

Mercer used its extensive experience conducting work site programs and developing customized training programs for business and industry to work with these companies. The college had previously administered two national workplace literacy projects which gave it substantial experience in evaluating the needs of business organizations. In addition, the college had already worked with some of these partners to provide other programs for their workforce. This prior experience encouraged the openness of communication that was required to develop a strong partnership.

Six companies participated in this project with the college on this project: Hann and DePalmer (HD), M. Grumbacher (MG), McLean Engineering (MCL), Rhein Chemie (RC), Sadat Associates, Inc. (SD), and Setco, Inc. (SC).

Hann & DePalmer, a leader in the fulfillment and information services field, provides a full array of marketing and promotional services to *Fortune* 500-type companies. Their services include warehousing, distribution, fulfillment, inventory management, data services, database management, direct response marketing, printing services, sales promotion, and 800# operator service. As a five year old company, Hann and DePalmer is rapidly growing and needed staff who could assume new responsibilities accurately and competently. Hann and DePalmer represented a service provider that was struggling to recruit and retain workers who could speak English well enough to understand directions and all workers who could use critical thinking and problem solving to complete their assignments on time and within budget.

Grumbacher, a leading manufacturer in artist paints and supplies, has been a reliable source of employment for many underprepared individuals in Central Jersey. It has been undergoing significant changes in its organization as it moves towards statistical process control measures to assure quality higher quality in its products. The company has a stable workforce who had limited basic skills which was previously not a problem on their job. However, as the company now competes globally, it must assure quality control and accuracy with by implementing statistical process control and other verification measures that require more in-depth understanding the of basic skills and higher level math skills. Moreover, many of the workers could not speak English and had to take instructions from a bilingual plant manager. If he was unavailable, communication between the two cultures broke down. In addition there was great concern among Grumbacher's plant supervisors about the current workforce being prepared to utilize the new technological equipment when it was instituted. This underpreparation had significant implications for the continued employment of low-skill workers and for the productivity of those who remain employed.

Rhein Chemie is a small manufacture employer in the Trenton area and as such represented the declining smokestack manufacturing industries that were once the predominant employers of lower-skilled workers in the metropolitan area. Rhein Chemie, a chemical manufacturer providing chemicals to an international market, required a skilled workforce. Like most other Central New Jersey manufacturers, they were competing for scarce human resources in a competitive geographic region. Oftentimes, they had been forced to accept employees whose language, literacy and numeracy skills were below a desired level and this impacted their accuracy rate.

The college added three small businesses to the partnership that greatly enriched the program. McLean Engineering is a small manufacturer of electronic blowers. This company hired a diverse workforce that included workers from Asian and Hispanic cultures. Although these workers had excellent work ethics, they were unable to communicate in English with other workers or their supervisors, and instructions were given by visual example rather than spoken explanation. This was time consuming and often led to errors that had to be caught by others on the manufacturing line.

Setco, Inc. is a slightly larger organization that manufactures plastic bottles. Its organization was undergoing rapid change in the types of technology that was required of its workforce. Since

the 1980's, accelerated technological change has influenced this manufacturer to shift to automated production which demanded a more literate workforce. If they were to retain their current workforces and remain viable, the company had to address employees' basic language deficiencies and technical skills deficits. Preliminary needs assessments suggested skills inadequacies among their employees, especially with communicating in the English language. It needed a workforce who could follow directions, understand how to keep the highly complex robotic machinery running at peak levels, and could communicate effectively within departments and with other shifts.

The final company had a slightly different profile. Sadat Associates, Inc. provides environmental engineering studies for private and public organizations. The employees in this company were relatively new to this country and, although highly educated, had difficulty speaking and understanding American expressions. This was impeding their success as clients found it difficult to communicate effectively with their staff. Therefore, others in the company had to spend considerable time rewriting reports and communicating with clients to make the operation a success. Learning to accurately write technical reports so that the layman could understand them using correct American language was a challenge that this company undertook.

The main emphasis of the program was placed on having an immediate and direct impact on a target population of 900-1200 adult workers who had inadequate skills and for whom training meant continued employment, career advancement, and/or increased productivity. The original target number had to be revised to 600, a more realistic number given that the entire hourly workforce of these six companies was only that number.

Each company invested heavily in the program and encouraged their employees to participate in classes. They provided replacement coverage when possible and permitted classes to run daily at their sites in training rooms and offices refurbished or built for the program. In addition they assigned human resource personnel to help administer the company logistics of the program, and gave release time for the workers to attend classes and advisory council meetings, literacy audits and other elements of the program as required. During the grant period the in-kind contributions from the six companies was $295,281, which reflected a sizable contribution for companies ranging in size from 40 to 190 workers.

Although the six companies had diverse literacy needs, the college addressed this diversity in a contextual approach to literacy that merged basic skills to tasks at work. The contextual approach had the advantages of making the tasks easier to learn and lessening the stigma of "remedial" school work. In contrast to literacy approaches that assume one basic curriculum is applicable to the needs of all, the Mercer program assured that the literacy skills being taught were relevant to the particular literacy requirements of actual jobs in the workplace of the business partners. The college staff had experience in the development of job-specific curricula. They were able to customize programs in both technical training and basic training for business. By establishing a partnership among an educational institution, manufacturers, and service industries, the project included all the elements that were required to develop a program that can be replicated in a wide range of workplaces.

The college provided a strong support service program in conjunction with the instructional workplace literacy program to increase retention. Employee participants were assessed and individual education plans were developed in conjunction with the educational programs. Both formative and summative evaluation procedures were used to assess specific program objectives.

Responsibility of Partners

Each partner was responsible for specific tasks. Mercer County Community College was responsible for the following:

- Conducting needs assessment
- Developing curriculum
- Disseminating curricula to employers and educational institutions
- Producing video tape
- Developing and administer assessments
- Developing instructional materials and modules
- Disseminating instructional modules to employers and educational institutions
- Developing personal development workshops
- Producing instructional guides and program materials
- Disseminating instructional materials to employers and educational institutions
- Providing orientation
- Providing counseling, advisement, referral and follow-up services
- Conducting over-all evaluations
- Hiring and supervising project staff
- Ordering and maintaining equipment
- Providing grant administration and monitoring services
- Providing instruction on the company sites
- Contracting for external evaluation
- Evaluating curriculum materials

Hann and DePalmer, M. Grumbacher, McLean Engineering, Rhein Chemie Corporation, Sadat Associates, Inc., and Setco, Inc. were each be responsible for the following:

- Providing planning team for task analysis, curriculum development and evaluation
- Providing work related materials for curriculum development
- Providing training facilities
- Recruiting employees
- Providing data on employee job performance and attainment
- Conducting site specific evaluations
- Testing replicability of the model literacy project for other employee groups
- Providing released time for employees to attend classes
- Continuing development and implementation of the program at the end of the grant period

The Advisory Committees

Each company selected a panel of employees from all levels of salaried and hourly staff to help customize the program for their organization. To the extent that they carried out their responsibilities their work helped shape the program and provide corrective measures. In addition, because the companies were small other employees within the company often offered suggestions and acted as liaisons with the college to suggest activities that reflected the changing work environment.

The Advisory Committees were responsible for the following:

- Providing information which helped update, modify, expand and improve the quality of the program
- Making recommendations to strengthen the curriculum
- Identifying needs, determining priorities and reviewing and evaluating the program
- Recruiting students
- Acting as a liaison between the employees and the college to assure that all needs were being met

Organizational Procedures

To understand the organization in order to implement a workbased program, Mercer analyzed the jobs and/or tasks targeted for this project using a functional context orientation. Since the industries who joined Mercer in partnership were dissimilar, the examples in the curricula and job-specific assessments they developed differed. Mercer worked with each partner on a "literacy audit" process to identify the specific skills required for each job category targeted by Hann &

DePalmer, M. Grumbacher, McLean Engineering, Rhein Chemie Corporation, Sadat Associates, Inc., Setco Inc., for basic skills upgrade training.

The audit process involved observing workers performing their jobs, interviewing those workers, and interviewing the supervisors. A DACUM (Developing a Curriculum) process, which systematically analyzed each component of a job and the academic competencies required for that skill, was then developed. Using this information a matrix of the skills and competencies required for each major job type was charted. The college then used the DACUM chart to develop a curriculum that was directly linked to job requirements, skills and competencies. The companies found this information valuable in understanding the specific skills their workers needed.

Mercer customized the training offered to the particular jobs being targeted. This incorporated information acquired from on-the-job observations and interviews with employees in targeted jobs, discussions with supervisors, and the collection and analysis of the written materials used in or required for those jobs (e.g. manuals, reference charts, certification examination materials, occupational safety examination materials, labels, etc.). Training materials developed were sensitive to the learners' workplace literacy needs and incorporated the literacy skills necessary to specific jobs. The relevance of this alignment between the learners' work experience and the development of training materials motivated and promoted learning and helped in the transferal of learning. This was instrumental to the success of this program. The learning was adult oriented and created an atmosphere for employees to be effective learners.

In addition to academic skills, all courses reflected the new environment of businesses, i.e., the need for team building, problem solving, critical thinking, and creative thinking. The focus of the program was to create strategies for the workers to provide them with skills to deal with their changing environment. The program was based on the philosophy that workers needed to be able to change as their jobs changed, and there were enabling strategies that workers could learn that would make them more valuable workers in the future.

With this information Mercer customized the literacy training offered for the particular jobs being targeted. The training established a replicable instructional program to develop literacy skills that were both job specific and basic so that participants acquired functional literacy skills that were

applicable to the increased skill requirements in their workplace. This increased their productivity, job retention, retrainability, and career advancement potential.

To enhance a continuing support service program in conjunction with the instructional workplace literacy program a counselor was assigned to increase participants' retention and completion of the program. She provided in-take counseling, mid-point assessment and an out-take counseling. She was also available for intervention if a student was having difficulty or wanted to drop out of classes. Because the companies were so small, often the students developed a counselor relationship with the classroom instructor and used her for a support system as well.

All of this groundwork helped to develop a strong partnership with all six companies that ensured that the project goals were accomplished and that the program continued after the grant ended.

II. ESTABLISHING RELEVANT CURRICULA

Audits

In analyzing the overall skills of the workforce, the literacy audit identified the following basic skills/literacy deficiencies: oral and written communication on various levels within the organizations, limited English proficiency, basic literacy skills including math related to blueprint reading, logical/rational thinking skills, and workplace sensitivity and other interpersonal skills.

Specific areas for intervention included:

Language-Based Literacy

- understanding structure and content of instructions
- reading and interpreting work orders
- reading and following specifications accurately and quickly
- completing forms and documenting work processes and accomplishments
- following directions on how to operate complex machinery and equipment such as numeric control equipment;
- reading and understanding digital output
- monitoring and verifying correctness of work done
- recognizing form and function of particular materials
- reading, writing and speaking in English to perform work required

Graphic Literacy

- interpreting flow charts that document job processes and locating sources of errors
- understanding graphic or statistically oriented information
- reading graphs and charts, flow charts, and specification tables

- interpreting computer generated graphs and other data information and making appropriate decisions
- understanding blueprints as it related to specific jobs

Content Knowledge
- recognizing work related vocabulary terms that appear in instructions
- recognizing and comprehending the technical terms used in quality improvement processes
- recognizing physical quantities and their units

Numerical Literacy
- understanding specifications
- understanding and implementing techniques required for quality monitoring and improvement
- understanding estimates and specially relationships required for packaging

Interpersonal Skills
- learning to learn
- setting goals
- setting time management
- building self esteem and confidence
- learning assertiveness training
- understanding stress management
- understanding career mobility options
- understanding team building

Using the DACUM as a major tool to develop curricula, all the needs identified were addressed through a comprehensive program that integrated needs assessment, instruction, support services and evaluation.

Evaluation

Evaluation is essential to any educational process. Therefore, a significant emphasis on evaluation and accountability was integrated into the program. Mercer implemented an evaluation design that included both formative and summative evaluation to assess the effectiveness of the total project.

The college's internal evaluation was formative (on-going) and summative to allow for the constant monitoring and adjustment of activities to insure that they were on time and of high quality. The evaluation design consisted of several components.

- *Performance Evaluation Measures Monitoring*

The project staff developed measurable performance evaluation criteria for each of the program activities In addition they: documented all efforts and activities of the program. All program were competency-based and included pre and post-tests. They documented all persons served by the program and described the methodology for data collection.

Demonstrable increases in worker productivity were anticipated as learners improved skills which had been identified as critical to successful task completion. For example, prevention and correction of errors increased as a result of ability to use manuals. Overall, worker's reliance on literacy increased, as did the ability to judge when documents should be used, with resulted in improved effectiveness and efficiency. This was especially true in the McLean where diagrams, part numbers and blueprints were so critical for their success.

- *Impact Surveys*

The partners attempted to gain perceptions about the progress of activities and their benefit to their institutions by measuring these perceptions of the effectiveness of the grant.

These impact surveys contained specific questions for each activity such as:

- What is the impact on each of the individual partners?
- What is the impact on each of the individual participants?
- How have the components of the program affected mastery of basic skills content?
- How effective has the private sector involvement in the project been?
- What is the impact of the project on resolutions of the problems the project addressed?
- What has the impact been on job advancement, job performance, and skill acquisition?

- *Student Information*

In addition, carefully constructed questionnaires and interviews were used to collect data and reactions to activities of the program. Student and staff information was critical to evaluating:

Student Input

- ease of access
- relevance of materials/information
- perceived accuracy of information
- perceived value of activities
- suggestions for additional services and information

Staff Input:

- activities, interactions, sentiments
- suggestions for revisions/additions
- ease of using materials/test data with students
- quality and usefulness of faculty development activities.

This extensive use of survey data allowed the project staff to identify those components which had the greatest impact and those activities which were perceived to be less effective.

Extensive surveys were conducted to determine how effective the instructional materials and product distribution to employers had been. In addition to the questionnaires previously described, employer on-site visits were conducted by the project external evaluator to determine the effectiveness of the instructional products distributed by this project. (See Appendix G)

- *Summary Evaluation*

Mercer planed an extensive summary evaluation. The approach to this task was two-fold; to conduct an extensive process evaluation and to contract with an external evaluator to examine all elements of the project. An external evaluator was employed to evaluate all elements of the program.

Through the implementation of this evaluation design, Mercer provided a thorough evaluation of all grant related activities.

Course Outlines:

Specific course outlines are included in the Appendix C.

Customized Learning

The college developed a curricula that reflected the needs of the adult learner at a worksite. While the literacy audit was being completed, the college staff evaluated existing workplace literacy materials from the previous two National Workplace Literacy grants that the college was involved in and selected portions of those materials that were relevant and transferable to the new sites. This served two purposes: first, it validated the transferability of products developed for previous industries; and, it provided a basis to begin developing additional customized curricula. Existing and appropriate materials were adapted and new materials was developed in order to align instruction with the audited needs of all six companies. Source books were purchased for instructor reference, searches of ERIC Clearinghouse and other agencies provided enormous assistance in obtaining information about the latest information in the field. However, because the needs of the clients were

teaching, the workplace literacy team developed new material to satisfy the specific needs of each workbased environment.

The curricula development began with the literacy audit which included the use of the DACUM process. This job analysis was a way of critically assessing the components of a given job in order to describe the job. The curriculum developers sought to describe the job, determine the required behaviors of that job, and identify the conditions under which these behaviors should occur. Particular emphasis was placed on job tasks that required reading, computation, and problem solving. To gather this information, workers were observed on the job to get an understanding of the thought processes used by competent workers. Staff collected printed materials workers used, and observed methods that workers used to solve problems.

By observing and interviewing workers and examining job-related printed material, the project staff was be to better understand the demands of the job. This understanding allowed them to prepare materials designed to teach the basic skills required for each job. Other outcomes of the literacy audit included samples of printed materials that workers used on the job and job task scenarios which were used to create simulation exercises for workers. Through this comprehensive evaluation program developers saw how a competent worker thought through a task and used this information when creating instructional materials.

Research has shown adult learners are more likely to succeed in their studies if the subject matter, materials and methods are relevant and appropriate to their own individual interests and styles. Therefore, upon entering the workplace literacy project, the students were given individualized proficiency testing. The results of the testing was used to develop modules at various levels of proficiency. However, in these small companies all classes were heterogeneous. Therefore, all course modules contained specific competency objectives that were cumulative to the program. To assure that all workers could receive this training, the modules overlapped within the disciplines. For example, in this way, students taking English as a Second Language could still learn how to estimate the amount of boxes required to fill a pallet.

The one exception to heterogeneous classes was for individuals who were unable to read or write at the most basic levels. These individuals met individually or in very small groups with an instructor or a counselor with curricula customized to their very basic needs. This curricula expanded from learning to read and write their names and addresses to interpreting company information and computing basic numeric functions on the most basic levels.

Each student had an orientation to the program in a group session and than had an individual appointment with the counselor/guidance specialist who developed an individualized educational plan that covered their involvement in the program. The individual development plan set personal educational and work goals for each employee and identified the steps necessary to accomplish those goals.

The plan was a tool for the learner, the instructor and the evaluation team. It was used not only to guide the provision of appropriate, relevant instruction, but also to monitor the instruction and learning process and to begin to establish a broader plan for on-going learning once particular job skills were obtained. Developing employees who are "life-long learners," although not a direct or measurable objective of the proposed project, is an important goal of these businesses as they enter the 21st century. Similarly, employees began to view life and work as a continual learning process in order to be able to succeed in the changing workplace.

In designing the literacy program, considerable thought was given to the environment in which the training took place. Each of the partners and particularly the college had experience in training adult workers. Each of the partners recognized the important effects the training environment had on learning. The environment had to be welcoming, physically comfortable, and supported by materials of interest and relevancy to adults. Therefore, each company provided space on site using existing space or by creating space in the building and furnishing it appropriately. Four of the companies also provided additional office space for the instructors which became a hub of activity for students to come for additional assistance or counseling. In addition, the companies provided additional space for an on-site computer lab for employees to use on their own time. These were well equipped and comfortable training rooms that were fully equipped with desk-top computers, learning materials, and comfortable seating. These training rooms were open during

break times throughout the normal workday and after hours. In addition, the learning resource centers in the college's campuses was open after work hours, on weekends, and during the evening for students to drop in and continue to reinforce their learning. Few employees took advantage of either the colleges resources or the company learning centers because of family and additional job constraints.

Providing basic skills training in the workplace raised additional issues that had to be addressed. Trainers had to understand and respect the workers' needs for confidentiality regarding skill levels, educational background and perhaps even participation in a class or tutoring. The location of the training had to be easily accessible as well as comfortable and non-threatening. Training schedules had to be flexible to fit the work shifts at particular job sites. Two of the companies were on a three shift schedule. The classes for these companies began earlier and ended later than the other sites. Classes ran from 8 a.m. through 6 pm. weekly to accommodate all the companies.

III. PUBLIC RELATIONS AND RECRUITMENT

Presentation to Workers

Most adults are reluctant and embarrassed to come forward and be identified as someone who needs training in basic skills. The workers at the six companies were no exception. Many workers were afraid that their deficiencies might mark and embarrass them and were concerned that information about their lack of literacy might be held against them. Many of the same workers had negative experiences with schooling and did not have much confidence in there own abilities.

To allow for maximum access to the program by these workers, the college tried to make the program as "user friendly" as possible. The counselor and staff developed an orientation program designed to provide information, dispel fear, and promote participation. To reduce the fear factor even further, the college encouraged workers to meet individually with the counselor and teachers who were assigned to their work site. This bonding removed significant barriers to employee participation. In addition, with management solidly behind the program, workers knew that their

jobs depended on them improving themselves through this program, rather than hiding their deficiencies from management.

With the support of all six companies, the project director and a teacher/counselor team visited the work site to talk to supervisors and all the workers at team meetings set up for this purpose. They introduced the program, disseminated flyers and posters, and were available to answer questions about the goals of the program and the benefits to the participants. They also announced the time for individual meetings with workers and described the extent of the program. In addition the supervisors talked to their direct reports about the program and encouraged their participation. Flyers and announcements were placed in strategic locations and articles were included in the company newsletters.

Due to time constraints and a decision to have smaller personal meetings with the workers in these small companies, we did not develop a video for the orientation portion of the program. However, towards the end of the program when there was a need to institutionalize the program without federal funding, the college developed a promotional video to use to market the workplace literacy program to other organizations. With limited time to speak to workers, and limited resources of companies to show a video to large groups, the staff felt that a more hands-on approach to orientation was a better avenue to encourage the workers to be part of the program.

The counselor spent a considerable amount of time at each location interviewing employees and preparing them for the program. By the time information appeared about the start of the program the teachers were setting up their offices at the sites and were available for questions.

IV. ASSESSMENT, PLACEMENT AND COUNSELING

Assessment Procedures

In small companies time away from the job is critical. Therefore the college had to limit the time and number of people involved at testing at any one time. The initial assessment of a small sample of workers was completed after the orientation program to determine general levels of math and reading competencies. The college used the TABE test because it was normed and considered a reliable test. However, the TABE test was not work related, and this had a serious impact on the

reliable test. However, the TABE test was not work related, and this had a serious impact on the post-test implications. While it was determined that generally all the companies were functioning between a sixth to ninth grade level, functionally this information required much more in-depth information to be useful. Other tests were reviewed before choosing the TABE. The CASAS test was not used because of the time required and the level of information obtained The Educational Testing Service Test (TALS) was not used because of time to administer and score and length of the test. Although the TABE was selected, the staff recommended that any additional program use an in-house test that will validate the competencies being developed, or to work with a testing organization to achieve these results. Observations of the Wonderlick Test (Published by Wonderlick Personnel Test, Inc.) holds some possibility because it is normed with job labor codes and competencies and only takes 20 minutes to administer. However, this test also has its drawbacks such as unrealistic grammar performance, and needs to be evaluated further.

Results determined that many workers had severe deficiencies in reading, writing, math, communication, English as a Second Language, etc. The implications of these patterns were clear: workers needed to increase their basic skill levels in order to retain jobs and adapt to new tasks in the workplace. Therefore, the students, with the counselor and teachers' input, were placed in classes. In most cases the level was appropriate and the individual functioned well in the class. In several instances, the individual was unable to function in that class and was tutored individually or placed in a small group with an instructor. In addition, everyone was given the opportunity to use computer reinforcement to practice their skills. Progress in class was monitored through teacher-constructed pre-and-post-tests, in-class activities, and student self-assessment.

Counseling

The project counselor assisted in the orientations, prepared the personnel development workshops/seminars, conducted the workshops/seminars, was responsible for academic advisement and the development of the IEP for employees enrolled in the program. The counselor worked with the students to complete their stated goals.

Initially, the counselor met with each person to develop an individual education program (IEP) and to suggest appropriate courses available in the program. As the program progressed she conducted on-site workshops in personal development issues such as goal setting and time management. These workshops again reinforced the goals being taught in other classes such as team work, questioning techniques, and communicating with peers and supervisors.

One of the strongest components of the counseling program was a *Learn to Learn* program[1] where the workers were empowered with techniques to use in the role of students. Such aspects as how to ask questions, how to organize the material, how to take assessment tests, how to relieve anxiety were developed in a non-threatening environment. As the conclusion of the grant, many workers commented that this was a strong feature of the program because it was very motivational and provided specific strategies for success.

The counselor met with the students mid way through the program to assess their progress, and at the end of the program to do the final assessment. Additionally, she was available for students at risk of dropping out, and tracked the students progress through the program. (See Appendix H.)

V. FACULTY AND STAFF

Staff and Training

The college was fortunate to have staff involved in this project who were part of the last workplace literacy project. They were a dedicated team who each possessed expertise in several areas and were expert in adult-centered learning. The two most important issues in selection of staff for a project such as this is to have instructors who are flexible and adaptable, with expertise in several content areas. Although few people are credentialed in reading/writing, math and English as a Second Language, those who are certified in at least two of these areas are more beneficial a literacy program because this allows for flexibility in scheduling assignments. In multi-site, multi-work shifts programs this flexibility becomes vital. An additional resource is to hire adjunct

[1] Learning to Learn™ Critical Thinking Skills for the Quality Workforce, Learning Resources, Inc., Stanford, CT, 1991.

instructors on a long term basis for off hour courses that are hard to staff. These adjuncts need additional training in workplace education and also need to be adaptable and resourceful.

There were several changes over the course of the program. Ms. Patricia Carr, who was responsible for 50% time on the project for counseling, was assigned to other duties before this grant was awarded. She was replaced by Ms. Martha Gunning, an experienced counselor on staff at the college.

For the first three months the instructional staff was not available for this project. Instead the start-up staff consisted of the program administrator, the project director, the counselor and the curriculum designer who developed the curriculum, assisted in the DACUMs, visited sites, performed audits, and determined ways to achieve goals and meet the intense schedules. Once the entire staff came into the project, daily, then weekly meetings became part of the staff development. These meeting included discussing new trends in the field, curricula and individual student progress or challenges. The staff also benefited from a centralized resource library that was created to provide them with the latest information available in the field. In addition the staff participated in a statewide workshop on adult developmental learners to show other educators strategies for training in a workplace.

VI. FORMATIVE EVALUATION

Procedure

Evaluation and accountability was an ongoing process in this program. The college implemented the evaluation that included both formative and summative evaluation to assess the effectiveness of the total project with the assistance of the external evaluator, Dennis Bartow,

The college's internal evaluation was formative and summative to allow for the consistent monitoring and adjustment of activities to insure that they were on time and of high quality.

Performance Evaluation Monitoring Measures

The project staff documented all activities and efforts of the program, which included the demographic information of the people served in order to achieve an understanding of the

effectiveness of the program for the individual and for the project. Base line information of the students' academic skills came from the TABE test which was administered at the beginning of the program. The counselor also interviewed the students to establish academic needs and goals, and administered and an attitude survey during the Learn to Learn sessions. Classes were structured with pre-and post-test assessments to obtain objective criteria for measuring the success of the program's impact.

The majority of workers in each company took classes and there were significant improvements which companies attributed to the training. McLean Engineering attributed the decrease in turnover (12.7% in FY94 to 5% in FY95) to efforts made throughout the training program. Promotions were also attributed to improvements from learning. In Setco, Inc., 28 people (almost 18%) of their hourly workforce was promoted during the grant period. In Hann and DePalmer, seven temporary workers who could not be hired permanently because they did not speak English well were hired permanently this spring. At Sadat Associates the foreign born engineers are now boasting that they can write reports that can be understood by American non-technical workers. Rhein Chemie could not attribute specific quantifiable gains to the program because they used temporary workers to supplement their full-time staff and this invalidated any indicators. Grumbacher reported that the lines of communication opened and less time was spent giving directions with a bilingual supervisor.

In addition to academic testing, questionnaires were constructed and interviews were used to collect data and reactions to activities of the program. These were given initially, at mid-point and at the conclusion of the program. Student information was vital to evaluate the ease of access, the relevance of materials, the perceived value of activities, and for additional suggestions for services and information. Students also completed course evaluation surveys at the end of each course to provide an opportunity to give input on the effectiveness of instruction and suggestions for additional courses. The majority of students felt that they had benefited from the program in their work and family lives as well.

Benefits attributed to the literacy program for these six companies included:

- increased self-esteem
- a better informed, more participatory employee
- improved communication skills both on the job and at home
- improved understanding of work assignments and job responsibilities
- increased occupational mobility and career opportunity
- improved life coping skills
- improved job skills
- increased opportunity for higher standards of living-because people who were promoted were given pay increases
- increased job stability
- improved employee and work site safety records

Partner organizations benefited directly as well. Through the project, specially tailored curricula in instruction was developed that can be used by the partners for future training of employees. Each industry has more skilled employees to retain and promote. The partners also have strong, ongoing relationships established with the community college upon which further cooperation can be based.

Student Achievement

The evaluation of the program was enhanced by using multiple sources of input for formative and summative evaluation. By eliciting information from students, staff and management, in both numerical form, surveys and through observations and portfolio, a more critical examination of the program resulted which allowed for continuous quality improvement.

Results indicated that at the start of the project, the companies had employees operating academically between a sixth and ninth grade level. Specifically, the average grade level starting and completion level score for each company was as follows:

PRE AND POST TABE SCORES BY COMPANY

Company	Pre-Reading	Pre-Math	Post-Reading	Post-Math	% Increase Reading	% Increase Math
Hann & DePalmer	8.9	8.1	9.3	9.7	4%	25%
M. Grumbacher	7.0	6.6	7.9	8.1	13%	23%
McLean Engineer	7.3	7.0	8.7	8.9	18%	25%
Rhein Chemie	7.8	6.9	8.8	8.4	17%	22%
Sadat Associates- Not tested with TABE	All	workers	had	bachelor	degrees	
Setco, Inc.	6.6	6.8	7.1	7.8	24%	23%

The results of the TABE test show reasonable academic growth for each company given the amount of time spent with each individual and the length of the grant. However, the evaluation team strongly feels that this test is not adequate for the workplace. The skills taught were far different than the skills tested by this instrument. Therefore, if a person got several items wrong in a particular area they were heavily penalized. In addition, there was turnover in every company. Many people tested in the beginning were no longer with the companies while others entered the program. Therefore, the pre/post averages are computed against only one score. In addition, many ESL students who were tested with the Morano in the beginning of the grant were tested with the TABE at the end, making the overall scores appear lower than they actually were. The evaluation team suggests using a more workbased test for future projects in order to understand true advances in the program. The true test of success in this project is the workbased evaluations from students and management, and these were very favorable.

Perhaps one more realistic approach to quantifying academic improvement is to compare the pre and post scores for courses at each company. Using this standard, the following accomplishments were made at each company:

PERCENTAGE OF ACADEMIC INCREASE AS DETERMINED BY PRE-POST TESTING OF COURSES

Course	MGR.	HD	MCL	RC	SC	Overall Average
ESL	8%	11%	21%	7%	14%	12% All improved at least one level
Math	32%	26%	22%	16%	24%	24%
Reading	14%	27%	29%	11%	10%	18%
Writing	13%	21%	36%	18%	19%	21%

A demographic comparison of workers in this grant showed employees who were predominantly entry level, often from minority groups, with a limited amount of formal education. The students were mainly males who had been with the company less than five years. These was a wide range of English speaking ability, ranging from native born speakers to workers from India, the Middle East, Latin America and eastern Europe. Some of these workers did not read or speak English at the time we began, while others could read English but others found difficult to understand.

Profile of Employees Who Participated in Grant

# of Companies	6
Number of Participants	582
Average Age	33
% of Males	61%
% of Females	39%
# Years with Company	
1-5 years	67%
6-10 years	18%
11-15 years	8%
16+ years	1%
No Response	6%
English Speaking	81%
Education	
Less than High School	14%
High School Degree or GED	30%
Some College	17%
Degree or Vocational School Degree	15%
No Response	24%
Race	
Caucasian	42%
African-American	13%
Hispanic	20%
Asian	17%
Other	8%
Head of Household	22%

Student Evaluations

Before the classes began, students were asked to assess their strengths and weaknesses. This information became part of the planning tools to develop a program that could respond to their needs. At the end of the program they were again asked to respond. The results generally indicated that the workers felt that they had acquired the skills normally associated with more competent employees.

Most of the employees felt that they knew and understood the goals of the company. They were aware of details for their job and attempted to problem solve to complete the task. For the most part they were able to complete the jobs within the allotted amount of time or would work on the assignment until it was finished. They were able to voice their opinions during discussions and offer suggestions for improvement.

The team building aspects of work were reflected by employees willing to work both independently or being willing to help others get their job completed. They were open to suggestions and were more willing to assume responsibility for resolving problems.

These motivated workers were aware of quality issues and checked their work for quality control. While many felt that they did not like to write reports, those that did felt ready to undertake that assignment. There was a new comfort level with change and learning new things, which many attributed to the open learning from the classrooms. There was a willingness to question as a result of being taught how to question in acceptable ways. They also felt that they could now explain things to others in a more appropriate way. Most important, the lines of communication were opened and workers were better able to understand both sides of a situation.

P.R.I.D.E. Employee Questionnaire

Circle each statement to **1-5** on how well it describes your work at the present time.

To guide you:

1 = statement is true to an extremely **small** extent, **never**, or **not at all.**
3 = statement is true to an **average** extent, or about **normal**.
5 = statement is true **always** or to a **great** extent.

Of course, you may use the other numbers:
2 = degrees **between average** and **extremely low.**
4 = degrees **between average** and **extremely high.**

	Results in Per Cents				
	Never		Sometimes		Always
	1	2	3	4	5
1. I understand the company goals and work to meet them.	0	0	19	35	46
2. I find ways to solve problems.	0	0	8	38	54
3. I do all the important details of a job.	0	4	12	23	62
4. I get things done well and on time.	8	8	15	31	38
5. I often tell my opinions during a discussion.	4	4	31	23	38
6. I give suggestions that are practical and work.	0	0	0	42	58
7. I am very concerned about the quality of my work.	0	0	0	38	62

8. I work on my job until it is finished.
9. I know how to get things done or figure out how to do them.
10. I try to get things done right the first time.
11. I can be counted on to do my end of the job.
12. I work independently.
13. I need little supervision to get my work done.
14. I am good at my job.
15. I am willing to help others in my area.
16. I accept suggestions from other people.
17. I benefit from suggestions given to me.
18. I handle problems easily.
19. I pay attention to details.
20. I tell someone if I think something is wrong.
21 I do what I am supposed to do.
22. I am motivated.
23. I volunteer for more challenging jobs.
24. I check my own work.

Results in Per Cents				
Never		Sometimes		Always
1	2	3	4	5
0	0	4	42	54
0	4	15	35	46
0	0	12	38	50
0	0	0	42	58
19	4	8	27	42
0	0	23	35	42
0	0	0	46	54
0	0	0	42	58
0	0	15	35	50
0	0	38	27	35
0	0	15	38	46
0	0	15	35	50
0	0	15	35	50
0	0	19	35	46
0	0	12	38	50
8	8	15	31	38
0	0	23	31	46

	Results in Per Cents				
	Never		Sometimes		Always
	1	2	3	4	5
25. I volunteer to write reports.	4	12	15	31	38
26. I understand the vocabulary in this company.	0	0	23	35	42
27 I pick up new information and use it on the job.	4	4	12	38	42
28 I feel comfortable learning new things.	4	0	15	35	46
29. I know what is expected of me.	0	4	12	38	50
30. I break up a big job into smaller parts.	0	4	19	35	42
31. I keep asking questions until I understand.	0	4	15	38	50
32. I approach my work in an orderly way.	0	0	15	35	50
33. I can explain how to do something to others.	0	4	23	31	42
34. I ask the right questions to get the information I need.	4	4	15	31	46
35. I can understand both sides of a situation.	0	0	12	38	50

After each class students were asked to evaluate how the program affected their job, homelife, and goals they had set for themselves in the program. At that point modifications were made to insure a more productive program.

In addition at the completion of the program a series of focus groups for students and for management were held at each company. The following are some sample comments from these sessions.

FOCUS GROUP
STUDENTS

Company Name_____

1. When you heard that there would be training at the company what did you think about the idea?

   - o Glad that company gave employees the time to take the classes.
   - o Initiative to take the classes
   - o Good idea.
   - o Good to learn, especially learning a new language.
   - o Helped on a personal level with my job.
   - o Helped reading, writing, English as a Second Language.
   - o Classes continued even after someone missed some classes, otherwise classes were good.
   - o Scared at first, but once in class it was totally different.
   - o Personally helpful.
   - o Glad to be here to learn.

2. What did other people in your area say about the program?

   - o Some reflection on job security, advancement.
   - o Some people were happy, especially about ESL classes; helped them improve their English language.

3. Why did or didn't you take part in the classes?

   - o All took part except one was excluded.
   - o Wanted to learn more about job - refresher courses.
   - o Out of school for a while.

3a. What courses did you take? Did you request them or did your manager request that you take it?

- o Math, reading, communications, stress management.
- o English speaking classes.
- o Asked to be in classes. Took Learn to Learn, communication classes, English, writing, ESL.
- o Took 5 classes.
- o My manager told me to go to my first class.
- o Curious to take the classes.
- o Teachers were very good, especially the math class.

4. What were some things that you learned that you now use on your job?

- o Learning stress management helped employees to calm down.
- o Writing class helped to interpret what the employees were reading; helped to understand.
- o Communications class helped to approach someone to come in contact with.
- o Reading class helped to better comprehend what was read.
- o Problem-solving class helped to break down problems on the floor.
- o Math class shortcuts helpful.
- o Math helps on the job, especially calculators and short-cut methods.
- o Communications helps to talk with other workers about work.

4a. What were some things that you learned that you use at home or in your organizations?

- o Stress was helpful with small children at home.
- o Reading class helped to understand what employee read.
- o Math class helped with employee checking account.
- o Speaking and learning English at home; children are proud of their parents especially the fathers.
- o Communication class helped to check yourself and others become assertive.
- o No time to join organizations.
- o Volunteer to be a secretary or vice president in organization because we feel more comfortable with ourselves.
- o Feel better about answering questions.
- o Able to remember things later.

5. What did you think others who took courses got out of the program?

- o Other workers wanted to take class, but no time to attend because class size was cut and length of class time was also cut.
- o If employees knew ahead of time when classes would be held, so work schedules can be covered.
- o Ready to move on to other classes.

6. If you had designed the program what courses would you have liked to have included?

- o Four (4) hours of classes into one (1) day.
- o Back-to-back classes instead of splitting classes.
- o Homework assignments.
- o Different math and computer classes, more communication classes.
- o Hold certain classes once a month.
- o Computer classes.

- o English language classes.
- o Have separate classes for different types of people - some people learn faster than others.
- o Way to selectively work with all classes on all subjects.

7. As a result of taking courses, did your initial opinion of the program change?

- o No
- o Happy with the way things worked out

8. What were some good things about the program?

- o Math, reading - helped cut down on bad production on work floor.
- o Communication and writing.
- o Being reacquainted with educational system; crossfeed between employees.
- o Communication between each other carried on after classes ended.
- o Friendships carried on after classes ended.

9. What are some things that you might change?

- o After hours classes; Saturday classes.
- o Language class - some people are still unable to understand non-speaking English employees when they speak.
- o Scheduling - not being able to attend class.
- o More time spent on computers; reading and writing.
- o Courses need to be longer in length.
- o More people should attend classes.
- o Classroom too small; too warm.
- o Room setup a problem.
- o Would like to see a higher level of classes.

10. Would you recommend this program to other companies?

- o Yes
- o Go for it!
- o Yes
- o Definitely!
- o If they want it, sure!

11. What suggestions would you have for other small companies to make going to classes easier?

- o Reduce number of employees from each department from attending classes; some resent the fact that they had to pick up the slack for the employees attending classes.
- o Managers wanted to know why work wasn't getting done because student went to class.
- o Hold classes after hours, not enough time to attend classes.
- o Bring in extra people to work around people taking classes.
- o Classes after hours - may be good for some people, but schedules are "crazy" for others, would be hard to attend classes after working hours or on their own time.

- o Minimum 8-12 weeks for classes.

12. If you had another chance to do a training program would you do it? Why/not?

- o Yes.
- o Hard to say what's going to happen to the company in the future.
- o Try another training program using temporary workers while permanent employees attend classes.
- o Yes

Student PRIDE Survey Results

At the end of the grant period the students were asked to complete a questionnaire about the program. The following is an excerpt from the survey with the demographic questions omitted to emphasize questions that the evaluation team felt provided the most relevant information about the value of the program to the participants now and in the future.

The results strongly support the employees' satisfaction with a workbased education program geared for their needs. These employees, over 60% of whom have been with their companies over two years, felt that they would continue taking courses if offered (72%) and would recommend this program to a friend (83%).

The majority felt that these courses helped them at work now (71%), and would also help them in the future. Specifically, they felt that to organize themselves better, to communicate, to problem solve to follow instructions, to manage their time more appropriately, to speak English appropriately in their worksite and to understand and work with technical aspects such as blueprints.

If given the choice of coming to work on a day there were classes, over half said they would be at work. This is significant in industries where lost time affects the bottom line. In fact, many workers complained that they were unable to get to class because of the workload, and they would have liked to take classes. Yet when asked why they took the classes, less than (7%) said it was simply to get off the floor. The majority of workers took the classes to improve or update skills (71%), know more about the subject (8%), were made to go by a supervisor (7%), were preparing for the GED (4%), wanted to improve their English (5%), and wanted to help their kids or grandchildren (4%).

PRIDE SURVEY

Questions	Hann & DePalmer	Grumbacher	McLean	Rhein Chemie	Setco
How long have you been working for your present employer?					
2 years and over	66%	100%	85%	77%	97%
less than 2 years	34%	0%	15%	23%	3%
In addition to this job, do you have any other jobs that you do after hours or on weekends?					
yes	23%	18%	33%	13%	34%
no	77%	82%	67%	87%	60%
Have you applied for any other jobs in other companies in the last four weeks?					
yes	9%	9%	5%	4%	11%
no	89%	91%	92%	78%	69%
NR	2%	0%	3%	18%	20%
Do you think that your supervisor would say that you make fewer errors than a year ago?					
yes	51%	50%	56%	42%	34%
about the same	3%	6%	13%	8%	9%
not sure	46%	35%	31%	50%	57%
NR	0%	9%	0%		0%

Questions	Hann & DePalmer	Grumbacher	McLean	Rhein Chemie	Setco
Do you think that your supervisor would say that you are doing your job better than year ago? Do you think that your supervisor would say that you are doing your job better than year ago?					
yes	74%	61%	75%	50%	60%
about the same	9%	12%	10%	14%	11%
not sure	17%	21%	15%	36%	23%
NR	0%	6%	0%	0%	6%
Did you have to work harder while others were in class?					
yes	54%	27%	46%	25%	17%
no	26%	45%	42%	50%	54%
not sure	17%	9%	7%	8%	14%
NR	3%	19%	5%	17%	15%
Compared with over a year ago, does your group work better as a team because of the classes?					
yes	43%	13%	46%	36%	46%
no	26%	21%	10%	8%	20%
not sure	28%	26%	44%	39%	34%
NR	3%	15%	0%	17%	0%

Questions	Hann & DePalmer	Grumbacher	McLean	Rhein Chemie	Setco
How far in school do you want your child/grandchild to go?					
some high school	3%	0%	5%	3%	0%
graduate from high school	9%	6%	8%	6%	6%
voc., trade or business school	6%	3%	8%	22%	14%
some comm. or 4 yr. college	3%	12%	5%	24%	20%
graduate comm. or 4 yr. college	20%	35%	18%	22%	20%
graduate school	23%	3%	5%	17%	9%
have no children	31%	12%	46%	2%	9%
didn't respond	5%	29%	5%	6%	22%
Do your currently belong to any community/religious orgs.?					
yes	34%	26%	41%	33%	40%
no	46%	50%	51%	36%	37%
I did, but don't any more	17%	6%	3%	8%	6%
I would, but don't have time	3%	18%	2%	11%	3%
not sure				8%	9
NR				4%	5%
If yes, do you take a leadership role?					
yes	58%	44%	38%	8%	50%

Questions	Hann & DePalmer	Grumbacher	McLean	Rhein Chemie	Setco
no	42%	56%	56%	84%	36%
not sure			6%	8%	7%
In the past 4 weeks, have you read any magazines or books?					
yes	91%	73%	79%	72%	74%
no	6%	12%	15%	8%	3%
NR	3%	15%	6%	20%	23%
How far in school have you gone?					
-didn't graduate high school	14%	21%	28%	8%	9%
--high school diploma or GED	35%	52%	49%	31%	23%
-voc., trade or business school	9%	6%	15%	14%	17%
-attended, but didn't graduate from comm. or 4 yr. college	28%	3%	3%	8%	14%
--graduated from com., coll.	3%	12%	2%	6%	3%
-graduated from 4 yr. college	11%				6%
-attended graduate school					3%
-not sure					
-NR					
In the near future, do you plan to take, or are you currently					

Questions	Hann & DePalmer	Grumbacher	McLean	Rhein Chemie	Setco
taking any high school, college or vocational school classes?					
yes	46%	40%	46%	39%	31%
no	34%	24%	44%	28%	46%
not sure	20%	16%	10%	22%	20%
NR		20%		11%	3%
Did you take any PRIDE classes?					
yes	94%	85%	92%	64%	91%
no	6%	15%	5%	31%	6%
NR				5%	3%
If you answered no, why?					
not interested	50%	20%	50%	9%	50%
didn't need it	50%	20%		18%	
couldn't get off the floor		40%		64%	
no time		20%	50%	9%	50%
signed up but didn't get it/no					
not permanent employee					
NR					
Would you consider taking classes now?					
yes	50%	80%	50%	82%	100%
no	50%	20%	50%	9%	
NR				8%	
What type of classes?	business writing, reading	math, reading, computer, writing	math, blueprint reading	no responses	any mechanical skills, math, writing,

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Questions	Hann & DePalmer	Grumbacher	McLean	Rhein Chemie	Setco
					communication skills
If you answered yes to q. 21, why did you take the classes? (multiple answers)					
-to improve/update skills	85%	45%	100%	61%	66%
-to know more about a subject	3%	17%	6%	3%	13%
-supervisor made me	6%	10%	5%	9%	9%
-to prepare for the GED	3%	7%		9%	3%
-to improve my English	9%	10%	20%	4%	3%
-to get off the floor	3%	3%		13%	3%
-children/grandkids					
-other					
Were you more likely to come to work on days you had class?					
yes	55%	72%	56%	61%	81%
no	24%	10%	28%	9%	9%
not sure	12%		14%	17%	3%
NR	9%	18%	2%	13%	7%
Does what you learned help you in your current job, or would it help in future jobs in this company?					
yes	79%	66%	94%	52%	66%
no	9%	10%	3%	17%	9%

Questions	Hann & DePalmer	Grumbacher	McLean	Rhein Chemie	Setco
not sure	9%	7%	3%	26%	12%
NR	3%	17%	2%	5%	13%
Which skills and why?	math, reading, communications, writing, ESL, problem solving, organization skills, time management	math, reading, communication, writing, stress, ESL	-ESL-my English is better now -Writing-helped me to organize my job better -math, blueprint,-reading, -communication - skills, problem solving, instructions, -stress management	math, reading, ESL	math, reading, communications, writing, ESL
Would you recommend the classes to a friend?					
yes	82%	83%	92%	78%	81%
no	6%	0%	3%	13%	3%
not sure	6%	14%	3%	9%	8%
NR	6%	4%	2%		8%
Would you consider taking more classes?					
yes	70%	62%	86%	78%	78%
no	6%	0%	6%	4%	3%
not sure	12%	14%	3%	9%	6%
NR	12%	24%	5%	9%	13%
If you answered yes, what would you take?	communication skills, ESL, Spanish, reading, writing, math, stress management,	ESL, communication skills, GED, Spanish, reading, writing, math, computing	ESL, math, dealing with difficult people, team building, advanced math, electronics,	communications skills, ESL, GED, Spanish, math, computing	communication skills, ESL, GED, technical reading, stress, math, computing

Questions	Hann & DePalmer	Grumbacher	McLean	Rhein Chemie	Setco
	computing, understanding instructions		computing, reading, writing, blueprints, Spanish, GED		
If you answered no, why not?		I don't see the need			
How useful do you think the classes are to you now on your job?					
useful	51%	41%	78%	48%	50%
somewhat useful	30%	10%	14%	17%	34%
not too useful	3%	3%			3%
not sure	3%	6%	8%	9%	6%
NR	13%	40%		26%	5%
Would you recommend the classes to a friend?					
yes	82%	83%	92%	78%	81%
no	6%	0%	3%	13%	3%
not sure	6%	14%		9%	8%
NR	6%	3%	5%		7%
Anything else you would like us to know about?	-More advanced math and English -recognition and gratitude for the teachers -hate to see the classes end -very adult, not what I expected		-Thank you very much for the time you spent with us. -The teachers were very helpful and patient. -More case studies and practical situations		

Company Input

The management of the companies also participated in impact surveys throughout the program to gain an understanding about the progress of activities and the benefit to their institutions. These impact surveys contained specific questions geared to understanding the impact of training on each of the individual partners, individual participants, the results on the job from learning basic skills, the impact on job advancement, job performance, and skill acquisition.

Specifically, management were asked to view this program as a way to combine business outcomes with educational outcomes. The initial planning equated one area to the other, as seen by the next chart. Therefore, when the final evaluation was requested, management used this as a reference to determine the outcomes of the program.

AREAS FOR EVALUATION
P.R.I.D.E.*
(PEOPLE RETRAINING FOR INDUSTRY EXCELLENCE)

BUSINESS OUTCOMES	EDUCATIONAL OUTCOMES
• Employee empowerment	= communication skills
• Attendance	= increased confidence, morale
• Safety	= following directions
• Per unit production	= accuracy
• Lower error rates	= better communication and teamwork
• Reduced management time for instructions	= communication, directions
• # of product defect pre/post program	= details, directions, etc.
• Quality measurements	= reading, math, etc.
• Increased on-time shipment of orders	= details
• Positive customer feedback	= customer service, team building
• Improved morale	= attention from program, feeling company investing in employee
• Reduced turnover	= more skills, can hire internally
• Reduced waste	= accuracy
• Promotions	= improved skills
• Improved safety in non-English speakers	= improved ability to communicate
• Bidding out on other jobs	= increased confidence and ability
• Client satisfaction	=accuracy

- Client satisfaction =accuracy
- Complaint reduction =communication and accuracy
- Other company standards = work with management

Instructor Comments

The following are selected comments from the instructors and counselor involved in the project:

- There is a marked difference between training in large and small businesses. In small companies the instructor is in much more direct contact with the Human Resources Managers and their involvement and commitment filtered down very quickly onto the floor. I got to know the front line supervisors very quickly, and with that I quickly became attuned to their specific needs, as well as the individual needs of the students. Relationships developed when they saw I could be flexible and change course material to met those needs. This meant that training was seen to be of immediate and direct value to them, and before long supervisors and line leaders would come to me with problems, and wherever possible we worked together to rectify them.
- We incorporated writing and instructions into the classes. I got my ESL students to teach me how to build one of their more simple units. We assembled it together in class and then wrote down exactly what we did. I discovered how few of them knew the names (and particularly the company names) for the tools and the processes they used daily. I found myself spend more and more of my time with them on the lines. The resulting set of instructions was so good that the supervisor and I began to talk about the usefulness of a formalized set of instructions that could be given to new-hires in addition to the hands-on instruction. Then the supervisors and line-leaders took a higher level writing course which was very successful. The end product was a set of instructions that was given to management. Participants felt a real sense of achievement and praise from higher authorities.
- Because the companies were small and everyone was strongly encouraged to take classes, we were able to train most of the population up to line leaders and supervisors. This made our training more effective. The average class size was between six to ten people. The classes were informal and comfortable, and it was very easy for students to relate to each other and to me. Another advantage related to company size was I saw many people for two or three different courses, and when I identified people with particular learning disabilities, I was able to work with them individually and in small groups for the length of the grant. It was in these areas that I could see the most development in skills. Not only did these people feel a great sense of achievement, but there was a direct improvement in job performance, noticed by supervisors and co-workers.
- Ten or twelve week classes are good..you get commitment with few absences
- The more directly job related the content was the more students saw the relevance to their situation, and the easier it was to translate what we were doing in class to job performance.
- We did a lot of hands on training with ESL students using tools and processes, working on understanding instructions and communicating problems they might have.
- In the reading classes I constantly reinforced the reading strategies by applying them to differently types of material they had to used.
- They finally learned the meanings of company abbreviations and codes!

- Results related to the job ...people were better able to read work orders and problem solve when mistakes were made. Students were more able to read, comprehend and summarize more complicated material, thus taking some of the burden off the overtaxed small human resources departments.
- I became a real facilitator for groups of engineers. We made improvements on the technical reports they have to write, and formative procedures. Other people were finally able to understand what they wrote.
- In ESL classes group problem solving situations were based around company literature such as time cards, schedules and forms.
- Supervisor involvement was important
- Roles plays and dialogues worked well. These were based on co-workers' concerns about organizational activities (making sense out of instructions).
- Modules for ESL worked best...dialogue, ESL based writing, ESL communication, etc.
- adapting work material for ESL such as graphs and math
- using company apparatus in class worked-ex., breathing tubes and bottles.
- Being able to swap ideas materials with other teachers was helpful.
- My primary goal has been to help students develop skills that will have a tangible benefit for them on the job though I believe that there were many intangible benefits for these students that may not be as readily apparent.
- I place value on teaching workers to:
    - catch mistakes by being able to judge the reasonableness of calculations
    - use mental arithmetic when an estimate or approximate answer is sufficient
    - work with others toward co-operative solutions
    - use a variety of techniques to approach and work on open ended problems
    - be persistent when solutions are not readily apparent
- The lead people and supervisors were a good source of specific examples of skills needed.
- The most positive feedback came from students in the blueprint reading courses who learn to read work orders and blueprints that previously had been indecipherable to them or who learned the meaning of part numbers that had previously been simply a long string of meaningless numbers.
- A service company worker learned to use the memory function on a calculator and saved hours of time.
- Some workers never thought of using estimation and mental arithmetic to catch mistakes in their calculations. They thought that their supervisor was an extremely talented genius because he could immediately spot mistakes in complex calculations.
- In addition to increased proficiency in specific skills, students made many intangible gains. Many of the students were initially scared of the classes. They often lacked confidence in their ability to learn new skills or they feared exposing weaknesses. Most students responded very quickly to the supportive environment in the classes. Students learned, for instance, to value their own opinions and knowledge when others in a class gave them positive feedback. They learned new ways of doing things by listening to their co-workers. They increased their confidence in being able to ask questions. Thorough listening to others they learned that there are many correct ways to approach problems and thus they became more flexible and gained respect for divergent opinions. Many students expressed increased confidence in their ability to learn in classroom setting. A number spoke of now feeling able to go back for a GED or college classes.

- CEU ceremonies to celebrate participant course completion encouraged students to continue.
- Updating course material at mid-point and adjusting it within each session helped to make and keep it relevant to the work site.
- Mid-grant program review of objectives and projecting objectives for the remainder of the project was very effective.
- Specific cases studies and role plays added to the results of the class.
- Identifying and reaching out to participants whose needs were great and could benefit from WPL was effective.
- Small group size of classes added to learning and comfort.
- Regular staff meeting to discuss ideas, learn new trends and programs, provide support to one another and discuss/resolve any problem were important.
- For the majority who enjoyed the courses, there was the added benefit of increased self esteem which comes from meeting a challenge/obstacle, gaining confidence in new learning skills and abilities and being listened to and "validated". All of which is difficult to measure but is observable.
- All the course material was built around participation from the group. Our assumption was/is that adult learners know a lot but they may not realize how to apply what they know. So, interaction was encouraged with the use of open-ended questions seeking relevant information to the topic. This was often recorded on the flip charts or on the white board, further validating the workers' opinions.
- There was no pressure to participate in classes. Some of the more timid participants were invited/encouraged to contribute but were never forced. Often, these people ere more comfortable speaking in smaller groups of three or four. As classes went on, you could observe the increased participation not only in small groups but also in the large group.

VII. SUMMATIVE EVALUATION AND OUTCOMES

Program Goals

The goal of workplace education program was to improve the productivity, accuracy, problem solving and communication skills of the workers. The company viewed the workplace training programs as a long-term investment in building a highly skilled labor force.

Evaluation was determined by program effectiveness according to yardsticks that business and industry applied to training. Quality indicators, measures and performance standards for each program were identified by the workplace rather than from educational communities.

In order to measure whether the program has any effect on the bottom line of the company, some baseline data was collected before the program was implemented. Some examples of baseline data that companies collected before and after the program included:

absenteeism, accident Rates, attitude surveys, employee and customer complaints, employees promoted, scrap rates, tardiness, employee suggestions collected and implemented

The evaluation instruments was the TABE, the IEP Interest Survey, pre-and post-tests, and focus groups and employee reactions. It was critical that the HRD office in each company develop their own system of how to measure the success of workplace education in union with the educational agency prior to the start of training.

The companies involved clarified the outcomes which were meaningful to their company. The companies formed teams and brainstormed freely to identify significant outcomes. The teams chose the instruments and processes needed to gather the information and decide how to collect, analyze and report the data.

The four areas that determined the programs' success were:

- Did the program meet the needs of the company?
- Did the employees/students master the program content?
- Was there a positive impact on job performance?
- Did the training provide a cost benefit to the company?

Having the outcomes in place served as a base for evaluation that was non-threatening since it was developed by the team. These evaluations also served the purpose of knowing whether the time and money invested by the company were worthwhile.

Did the program meet the needs of the company?

Results indicated that each company felt that their individual needs had been met to the extent of their commitment, time allocation and input. Some companies were extremely satisfied with employees who were now able to do far more than they could 22 months ago, and certainly far more than they would have without the training. On company was unable to allow training to the extent they wanted because of unexpected business constraint. That company received minimal benefit and understood this downside and agreed that they would receive some benefits, but not a lot.

Did the employees/students master the program content?

All employees mastered the content that they were exposed. However, due to work restrictions and the limited time of the grant, not everyone got as much training as they or we would have liked. It is fair to say that employees who needed to learn the complexities of English in the workplace got the most immediate benefit from the program. They now are able to be understood far better than at the beginning of the grant, and are integrating into the work community with more ease. In each company there have been examples of either job enhancements or more security within their same job due to improvement with their communicating skills.

While math scores indicated a great improvement, the numbers indicate different things in different companies. Most companies limit the amount of impact an hourly worker would have on the bottom line. Therefore, in many companies the math that the employees learned was a definite improvement for the individual, but the supervisors were unaware that the employees did not know how to do it. For example, one employee learned how to use the memory button on the calculator, thus saving her an enormous amount of time and frustration. Her supervisor assumed she knew how to do that. Another employee now uses mental math to determine if her pack patterns are logical. While she is working faster and more accurately, her supervisor attributes this to an improved attitude instead of mathematical improvement. There are instances, however, where math does directly impact the employees job. Statistical process control is used at two manufacturing companies. Both companies had to have employees learn the entire curriculum from basic calculations and mental math to charts and graphs before getting into the preliminary SPC. The SPC program will continue after the WPL program ends.

Because reading is not a primary activity for most of the employees we dealt with, we worked on strategies for reading and interpreting company materials. The success of this became apparent when human resources administrators noted that people are coming to their offices fewer times to question company information. In addition, employees are better able to read and write instructions for their job. In one company they developed a set of instructions that present and new hires will use. In many of the companies the question, "Can your employee

read better? can quickly be answered in the negative. Upon probing, such as, "Who explained the new memo on customer service?", the supervisor acknowledged that the employee was able to do it by himself.

The most significant global improvement was in the area of communications. Within department and throughout the companies, communication channels are opening. Messages for the next shift are more accurate and understandable. There are fewer arguments over petty issues. This data is difficult to quantify, put definitely has an inpact on an organization. This outcome is one of the byproducts of having classes include members from various parts of the organization. Not only does it give a name and face to another department, but it allows an opportunity for each person to present the position of their department in person. This eliminates the need to blame "them" for a problem. Better sense of team and more self-confidence is the result.

Was there a positive impact on job performance?

If turnover is one indication of improved job performance, MCL went from 12.7% turnover in 1993 to 5% at the conclusion of the grant. There was more job satisfaction and less poor behavior that would require being terminated. In other instances there were less errors as workers could interpret job specifications, part numbers, blueprints and instructions. For example, at MCL an error in selecting a part that is .001 different than the specifications will result in building a cooling unit that is out of alignment and will make noise. Before the program some workers did not understand the necessity of being totally exact. When a unit did not fit correctly it was turned over to the line leader for repair. This waste in time and resources was costly and often resulted in having to pay overtime to complete a job. There is more accuracy in the assembling of the products because of this program.

At GM, the Spanish employees can not understand directions given by English speaking supervisors. This helps them in their job because they can ask questions, (which they have learned to do), and understand specifications before they do the work. The result is higher quality packaging. In addition, for those employees taught quality control, it increased their

knowledge of tolerances and deviations to the extent needed to perform their jobs more competently.

At HD workers are able to estimate the need for reordering materials and can report it in enough time to avoid delay of shipment. They can pack similar orders accurately by understanding where to decode specific deviations in the instructions, and can communicate with other employees at their station about the progress of the work. They are able to problem solve situations within their day that would have taken supervisors input before the grant. Most importantly, there is less communication breakdown because of the English language barrier.

At RC workers are able to estimate the weight of a product more accurately, weigh it precisely, and prepare it according to instructions. This resulted in more accuracy and less rejects. Quality control is now maintained with workers who are able to record information or discuss it with their supervisors.

At SC, there is better accurate communication between the shifts. Notes are decipherable, information is more precise. Workers can pack product from a set of instructions, and record this information accurately, and can communicate it to their supervisors in English.

Finally at SD, engineers are able to write technical documents in English that is understandable to lay people. This is a significant part of their business success. In addition, these foreign born employees are able to speak to clients on the telephone and be understood, and can leave messages that result in providing accurate information.

Did the training provide a cost benefit to the company?

Cost is always a difficult issue to answer immediately because often a WPL program has long range implications that do not show up in the first evaluation. However, MCCC had the Wodrow Wilson School of Princeton University do an economic analysis of the college's second grant that showed positive results 18 months after the program ended.

Quoting from the finding, "The study used longitudinal administrative data and cross-sectional survey data to get their results. They examined the broad range outcome variables such as workers' earnings, turnover, performance awards, job attendance, and subjective

performance measures. They found that the program had a small, positive impact on the earnings at the company. Trainees were no more likely to leave the company than non-trainees. The training program had a positive association with the incidence of job bids, upgrades, performance awards and job performance.

Given the total cost of training (direct expenses and release time) for this program was approximately 4 percent of the average trainee's annual compensation, it we assume that completed job tenure is 16 years (slightly less than twice average incomplete tenure spells), use a 6% discount rate, assume the value of the training depreciates by 3% per year and that the return to the training is initially 0.5 per cent (the return we estimate), then the program pays for itself." We are assuming similar implications will be true for this grant, but we have not been able to use the University's assistance for this project.

Goals and Objective Accomplishments

The project had five major program goals:

1. **To establish a replicable instructional program to develop literacy skills that are both job specific and basic so that participants acquire functional literacy skills that are applicable to the increased skill requirements in their workplace.**

This aspect of the program has been accomplished with great success. As a recipient of three separate workplace literacy grants we have developed considerable experience in developing and implementing job-focused curricula that provides training in functional literacy skills that can be readily transferred to the job. This program has worked at all sites, in both manufacturing and service organizations. In addition, other state and county agencies such as the State Department of Welfare has begun to use these concepts in their programs with great success.

2. **To provide a literacy audit at H&D, MG, and RC and other small businesses to identify and document literacy needs of employees and literacy demands of jobs.**

In cooperation with the Human Resources Manager of each company, supervisors, the college conducted a needs assessment to: a) determine the kinds of literacy tasks workers were asked to perform on the job, b) informally assessed the educational level and language proficiency of the workers, and c) identified the gaps between literacy demands and literacy skills.

When this task was completed, the team reviewed the results of preliminary needs assessment conducted at each of the businesses. They conducted a preliminary analysis of language proficiency, literacy levels, and educational backgrounds of selected workers.

In addition to assessing literacy tasks and print materials, the college tried to determine the general level of language proficiency and literacy skills that workers possessed (especially workers who did not have English as their native language). The team interviewed supervisors and, where possible, talked to workers themselves to see how comfortably workers used language and print. The providers asked about their past school experiences and attainment, but many were from other countries and there was not the parallel to American school curriculum.

Information from the needs assessment were used to develop the curriculum so it best met the kinds of literacy activities and instructional programs that the companies required. Needs assessment data was also shared with teachers, and the counselor at the initial training session.

In addition the development team conducted a support services needs assessment. Workers were be interviewed to determine the essential support services required to assist them in retention and achieving success in the program.

The staff administered the TABE test as an assessment instruments to a sample of workers in targeted jobs for norming purposes and analyzed all assessment information.

To insure worker's needs were met, the project staff conducted a literacy task analysis/literacy audit. Using the literacy task analysis protocol, the team analysis job tasks which required reading, computation and problem solving. Workers were observed at their jobs and interviewed. The development team gathered the printed materials workers read to do their

jobs and attempted to understand the thought processes used by competent workers as they use printed materials to solve problems at work.

By observing and interviewing workers and examining job-related printed material, the project staff was able to better understand the demands of the job. This understanding allowed them to prepare materials designed to teach the basic skills required for each job. Other outcomes of the literacy audit included samples of printed materials that workers used on the job and job task scenarios that were used to create simulation exercise for workers. Through Literacy Task Analysis, program developers began to see how a competent worker thinks through a task and then used this information to create instructional materials.

The Analyze included work-based content information and difficulty levels. The literacy tasks documented and collected, analyzed and classified according to:

- The content knowledge necessary to understand or express the necessary information (e.g. vocabulary, technical terms, jargon, and assumed background knowledge).
- The difficulty of the sentence structure and the relative clarity of expressions and style.
- A common or not so common format in which literacy materials appear.
- The level of math ability required to fulfill each task successfully.

3. **To offer customized literacy instruction to companies' employees who are in need of basic or technological literacy training to increase their productivity, job retention, retrainability, and career advancement potential.**

Core classes were built around levels of cognitive and processing skills. The development of reading and math skills, strategies for processing materials and interpretation of graphic materials were provided for in each level of literacy training.

Instruction emphasized the acquisition of basic skills and literacy, and developed content knowledge through interactive student-centered activities that focused on actual literacy tasks. Instructors also worked closely with the counselor to help identify students at risk of dropping out. The team developed core areas of instruction (reading, writing, math, ESL and support skills (interpersonal skills). Within these areas, the team developed many modules to complete

the areas of instruction. Because the companies were so small only the most basic courses were homogenous. The higher level programs were more heterogeneous to allow for coverage for release time from the floor . Actual course content was adjusted to include information from the literacy audit and new information obtained as the program progressed.

During the first three months of the project, the development team created a recruiting and assessment procedure for the program. Employees were informed of the program and, since the management wanted total participation, all were encouraged to take part. Employees had orientation programs, and met with a counselor to see their options. The TABE test or the Morano Test was given if the person could not read English in order to determine the employee's level of competency in English. Additionally, an informal assessment survey was designed to determine the employee's educational history, educational goals, and support services needed, and this was used to determine placement in instruction. Recruitment and assessment was ongoing thought the grant to enable employees to continuously enroll in the project.

The program began with a six hour *Learn to Learn™* program that targeted the employees energies to the skills and strategies for learning. This packaged program was extremely beneficial in setting realistic expectations, creating an environment for learning and providing strategies for academic success that workers may not know.

Core Courses Developed:

- English as a Second Language
    - Tutorial
    - ESL for Manufacturing
    - ESL Advanced
    - Communication Strategies
- Reading
    - Tutorial
    - Interpreting Company Material
    - Decoding Complex Materials
    - Presentation Skills
- Communication
    - Report Writing for Technical Staff
    - Memo Writing

    - Business Memo Writing
    - Writing Clear Instructions
    - Business Writing II
    - Presentation Skills
- Math
    - Tutorial
    - Math on the Job
    - SPC
    - Tables, Charts and Graphs
    - Math for Quality Control
- Interpersonal Skills
    - Stress Management
    - Problem Solving
    - Communication Strategies at Work
    - Communicating Effectively in a Business Setting
    - Communication - The Next Step

Each of the interpersonal skills courses related to literacy and language acquisition as its formal point with lessons by the counselor. Relevant workplace application were incorporated into the workshops as appropriate.

4. **To enhance a supplemental support services program in conjunction with the instructional workplace literacy program in order to increase participants' retention and completion of the program.**

One of the biggest benefits to a successful worksite program is to have it on site during working hours. The barriers created by having to invest personal time or transportation are averted. Therefore, initial barriers to the program were eliminated. In addition the program was adult-centered. A 1986 study (Scanlon) examined participation in adult education and identified cost, relevance, logistics, and lack of confidence as the major deterrents. Each of those factors were addressed through the support services components of the project. Cost was not a factor as the industry and the college make the project available at no cost to project participants. Relevance was assured through the use of a functional context approach and its focus on workers' acquisition of workplace-relevant basic skills. Logistic problems were eliminated by offering of the courses at the workplace, offering special tutorial sessions for those few individuals who required this service, and making courses available during the normal workday.

Lack of confidence was not eliminated quite as easily. However, the Mercer staff and the business partners believed they were able to influence confidence through the provision of personal and professional counseling services, careful assessment and testing, development of an individualized educational plan for each participant, and careful monitoring of participant progress. Follow-up support services at the college were offered each participant who completed the program. As a result, the program had an 88% completion rate. This would have been much higher (96%) but two companies experience workrelated difficulties in releasing their people for certain periods of the program.

5. **To develop a strong partnership with H&D, MG, MCL RC, SC, SD to ensure that the project goals are accomplished and that the program is continued after the grant period has ended.**

The college has decided to incorporate the introductory classes into the college's curricular offerings for business and industry. The introductory class that integrates reading, math have been refined and are available to any industry in the area needing to provide these kind of courses to their employees.

In addition, the six organizations will continue to provide on-going training for their employees through in-house training or with program with the college. (See Letters of Intent in Appendix I.)

Supervisor/Management Evaluation

At the end of the grant each company was asked to rate the overall progress of their employees after training. The evaluation consisted of five areas of concern with included both academic and job-related competencies. Items included were: written communication; safety; communications; quality of work; and overall improvement since training began. The companies were asked to rank their employees performance by their ability to do the specific task most of the time to none of the time. The following results indicate that each company generally showed

a high level of satisfaction with their workforce at present because both academic and workrelated skills were sufficient for their present tasks.

OVERALL IMPROVEMENT SINCE TRAINING BEGAN

- Improved overall performance or knowledge of job
- Improved language and math skills
- Improved overall communication level
- Improved overall level of job satisfaction
- Improved overall self-esteem
- Improved ability to establish and follow through with priorities
- Improved overall knowledge of the work and company operations
- Improved ability to problem solve situations
- Improved general attitude
- Improved ability to use the technology required on the floor
- Improved interest in learning.
- Decreased number of absentees
- Decreased number of grievances submitted
- Decreased number of discipline records
- Improved workplace safety record
- Increased number of suggestions made
- Reduction in the turnover rate

SPECIFIC ITEMS OF IMPROVEMENT INCLUDED

- Recognized and read common words and meanings used at work
- Understood technical meanings required
- Understood expressions used on the job
- Recognized acronyms and abbreviations used at work
- Can follow sequenced illustration for assembly
- Can perform written or spoken directions given in English
- Can use written material to get job information
- Can use forms and written material to complete job
- Can do paperwork required for job
- Can follow written directions

SAFETY

- Able to read and follow safety rules
- Make suggestions and contribute ideas about safety
- Report errors about unsafe conditions

COMMUNICATIONS

- Can communicate within their own department and other departments
- Report absence or lateness.
- Listen and follow instructions
- Ask questions to limit mistakes
- Receive Fewer customer service complaints

QUALITY OF WORK

- Reduced time for directions
- Reduced number of reworks
- Can use blueprints (if applicable)
- Can use measurement tools
- Can compute job math
- Can monitor and report errors (to greater or lesser degree depending upon company)
- Completes paperwork
- Can read and set machines appropriately (if applicable)

In addition to surveys, the evaluation team held focus groups for management to determine their opinions about the success of the program. The following are some sample comments from the focus groups with company management.

FOCUS GROUP MANAGEMENT

Company Name_____

1. When you heard that there would be training at the company what did you think about the idea?

   - o Glad to be here to teach.
   - o No problem with company.
   - o Too good to be true sending people here to teach; great idea.
   - o Supported the program.
   - o Very good idea.
   - o Very optimistic about improving employee skills, avoiding mistakes.
   - o Mixed emotions about courses; OK with English, reading, writing. Questioned classes because some employees may have trouble understanding.
   - o Very happy - especially continuing ESL improved their skills. Encouraged employees to attend classes.

2. What did other people in your area say about the program?

   - o Enthused and happy.
   - o Some were not impressed.
   - o Spanish-speaking people happy to know they would be learning English.
   - o Some not sure.
   - o Not happy taking employee off the floor to take classes.

3. Why did or didn't you want your employees to take part in the classes?

   - o About 1/2 in some departments would be taking classes and not working.
   - o What could we possibly learn?
   - o Equal men and women in some areas take classes; some areas only men.
   - o Didn't need to take class - wasn't challenging enough.
   - o Classes held at the end of the day.
   - o Employees worried when they left when they left their job, someone else wouldn't do their job as well.

3a. What courses did they take? Did you request them or did your manager request that you take it?

   - o All classes - ESL, stress management, blueprint reading, writing, instruction, communication skills.
   - o Math classes (made less errors); communication (felt better about expressing themselves); ESL.
   - o Safety classes - less incidences on floor.

4. What were some things that you learned that you now use on your job?

- o Scales
- o Communicating with each other
- o Less fighting..can talk through a problem
- o Think before doing something
- o More accurate counts
- o Speaking English
- o Speak up more
- o Easier to give instructions
- o Use the instructions sheet for new employees

5. What did you think others who took courses got out of the program?

- o Employees make less errors, ask more questions; can understand their questions more clearly; less anxious.
- o Problem-solving themselves without asking supervisor.
- o More confidence on job.
- o Math classes very helpful.

6. If you had designed the program what courses would you have liked to have included?

- o Computer classes.
- o Effective communications
- o How to deal with difficult people.
- o Spelling
- o Remedial computer class - very basic class

6a. As a result of taking courses, did your initial opinion of the program change?

- o Still good

7. Was it difficult when your workers went to classes and left others to do the work?

- o Some planned ahead when they knew employees were going to attend classes.
- o Some employers "grit their teeth" and accepted it.
- o Some employers said it made it easier.
- o Difficult to do more with office people, not enough coverage.
- o Increased pressure to produce products because employees attended classes.
- o Needed to use overtime to keep up with work.

7a. What did you do to resolve this difficulty?

- o Got more people if certain job needed to get finished.
- o Abundant overtime.
- O Nothing I could do..overtime or work faster

8. Did you feel that your employees had to work harder for others when they went to classes?

- o No, can't speak for employees who picked up slack for the other employees.

- o Some were willing to work overtime.
- o Some did, others didn't.

9. What were some good things about the program?

- o ESL - helped Spanish-speaking people.
- o Stress management class; blueprint class.
- o Gave employees opportunity to learn more.
- o Shows that supervisors worked with employees to improve their skills.
- o Less resistance to change - classes may have helped employees to open up - change is good.

10. What are some things that you might change?

- o Add to communication classes.
- o Expand on what employees learned.
- o Teacher should inform student on what questions were answered wrong on test.
- o Elaborate on ESL.
- o Be able to describe what courses are about.
- o Advertise classes more conveniently.
- o Length of time for classes - too long.

11. Would you recommend this program to other companies?

- o Definitely.
- o Yes
- o Yes, but be selective of what areas would be improved.

12. What suggestions would you have for other small companies to make going to classes easier?

- o Would be a benefit other companies to attend classes on work time.
- o Make it easier for employees to take classes - talk to other supervisors.
- o Total management back-up, communicate positive thoughts.
- o Larger company would benefit much better, more employees to cover floor.
- o Offer incentive program.

13. If you had another chance to do a training program would you do it? Why/not?

- o Yes
- o Take other subjects or courses.
- o Yes, but benchmark areas where employees would be attending classes.
- o Assess program course one at a time.

VIII. WORKPLACE BARRIERS

Challenges and Solutions

Two issues summarize workplace training involvement: time and resources. Because the companies had so few employees, the program training time had to be juggled with the workflow. In two of the companies the unexpected rush orders were difficult to predict or work around. Because each company had a specific amount of instructor time, the flexibility to switch days was unavailable. Therefore, if a rush order came in five minutes before class, many students were unavailable for that day. One solution was for all companies to add temporary workers to handle these unexpected workloads. However, as business improved, these temps were integrated into the company and were not always available during class times. The lean staffing of the '90s certainly is a consideration for setting up an in-house program.

As we expected, the smaller the company, the less time it could allocate for training. One solution that MCCC used was to integrate curricula so that each course contained elements of the whole program. The college also stressed employee involvement so that peers could teach other workers either formally or informally.

Unfortunately there is no "right" or perfect answer for time allocation in a business environment. The college and the companies felt that training on-site during company time had more benefits than drawbacks. However, being on site made it difficult to tune out the pressures of the workday. While we made it a rule that employees were not to be interrupted once they were in class, this did not prevent them from worrying about a crisis at their job.

Everyone weighed the advantages and disadvantages of training after hours, either at the college or on site. Because of second jobs, child or elder care, transportation problems, home obligations, and personal issues, everyone decided that the workday decision was appropriate. It allowed us to have broader access to the workers, and promoted a company-wide atmosphere of learning. Because the companies were so small, the teachers became part of the normal routine. It was not embarrassing to go to class because almost everyone did at some point. In addition, the teachers had an open door policy where students could and did stop at their office for academic or counseling support.

The evaluation team feels that the challenges of teaching at the company were met the best way possible: with flexibility, a sense of humor, and a caring attitude that allowed students and teachers to work together to make up missed training hours.

IX. DISSEMINATION

The project director presented the concepts and the results of the project to audiences of adult educators and program administrators. The project director and staff gave presentations at: the following

- New Jersey Adult Developmental Education (NJADE) Annual Conference in November, 1993, *Establishing Basic Skills Competency in Industry:*
- NJADE Annual Conference in November, 1994, *Extending the Basic Skills Curriculum into an Application Based Program for Adults*
- Fall of 1994, the project director spoke about establishing a workplace literacy program of New Jersey's First Annual Workforce State Conference.
- Pennsylvania Adult Developmental Education (PADE) Annual Conference, Summer, 1994, *Functional Curricula in the Workplace*
- League for Innovation-Leadership 2000 Conference, summer, 1995, *Robin Hood: A Collaborative Model for Serving Small Businesses*
- In addition, the project director spoke about the program at state welfare agency meetings, state training meetings, Mercer College workshops and at a human resources managers' monthly workshop.

Articles about the program were included in:

- National Association of Printers and Lithographers (NAPL), Article in *Printing Manager Magazine* to describe how businesses can become involved in workplace education.
- *Mercer County Business Magazine*, March 1993
- Article published in PADE Annual Conference Summary-1994- *Functional Curricula in the Workplace*
- Article published in ERIC - Fall, 1994- *Reaching the Other Eighty-five Per Cent of the Workforce: Successful Training for the Hourly Employee*
- All curriculum will be disseminated to ERIC Clearinghouse

Panels:

- Served as guest to Gov. Florio's Adult Literacy Recommendation Committee- 1993 to consider adult literacy best practices
- Served on State Economic Commission on Training Roundtable

X. MONTH BY MONTH PLAN OF OPERATION

A complete month-by-month plan of operation was developed by Mercer County Community College, H&D, MG, MCL, RC, SC, and SD. The first three months of the 18 month program were used to develop curricula and complete the assessment phases of the project. The remaining 15 months were used to implement instruction, evaluate the project and disseminate project results and products.

Two training cycles were held each semester. With the extension of the grant from May 1995 through August, 1995, there were a total of six training cycles. The initial grant period was postponed until November, 1993. From that point on, the grant proceeded as scheduled with no break in training or deviation from the time schedule allotted. A sample of the major milestones and key activities during each month of the project follows:

Month-by-Month Plan of Operation

Month 1-3:
- Convene partners and finalize details of operational plan
- Form and convene advisory group
- Conduct job-specific curriculum and assessment workshop
- Conduct DACUM training sessions utilizing results of literacy audit
- On-site observation and interviews to develop needs assessment information, instructional strategies and finalize assessment tool selection
- On-site observations to provide technical assistance for curriculum and assessment development
- Education and business partners meet to finalize training plans, conduct support services needs assessment
- Preparation of Video Tape-Done at end of grant for institutionalization of program
- Administer placement tests for norming purposes with sample of workers in targeted job classifications
- Set worker productivity, retention and advancement objectives
- Develop and design record keeping forms for project monitor
- Finalize plans for conducting assessment and individual educational plan developed
- Complete curriculum development
- Complete orientations and academic advisement and placement sessions

Month 4
- Begin workplace literacy instruction
- Partners begin project record-keeping
- Evaluation team begins bimonthly technical assistance/formative evaluation visits

Months 5-15 (extended to 22 months)
- Continue instruction and progress monitoring
- Continue technical assistance
- Develop learner job performance evaluation methods

Months 6 and 12
- Advisory council meetings to review project progress and plan follow-up activities

Month 15
- Conduct post tests and assessments
- Gather learner productivity/job performance data

Month 16
- Continue instruction
- Analysis of learner out-comes data, job specific program assessments, individual education plan accomplishment, changes in productivity, etc.

Month 17
- Continue instruction
- Prepare learner progress and project evaluation report
- Finalize job specific workplace literacy modules

Month 18 (continued to month 22)
- Continue instruction
- Submit project final report to Department of Education to include:
    - job specific workplace literacy curriculum modules
    - learner outcomes evaluation
    - service deliver
    - guidelines for evaluating literacy
    - final evaluation report
- Disseminate instructional materials, reports, assessments, and validity summaries to employers and to educational institutions.

XI. CURRICULA

The project developed core curriculum in the areas of reading, writing, math, English as a Second Language and interpersonal skills, for a total of nineteen modules. These booklets are applicable for service and manufacturing industries for entry level workers who need to develop basic skills for their tasks. In addition, there is higher level technical writing for engineers or non-native speakers who need to write technical documents for their work.

Specific references to company materials were removed to assure privacy of their materials. Therefore, instructors will need to add segments of specific company materials for training purposes. The protocol for each class consisted on hands-on work-related dialogues, team work, case studies, and reinforcement activities relating to the weekly content. Students were encouraged to work together, simulating the business environment where employees work in teams to maintain the work flow. Curriculum reflected the need to value each other's ideas while emphasizing basic skills and critical thinking.

EXTERNAL EVALUATION

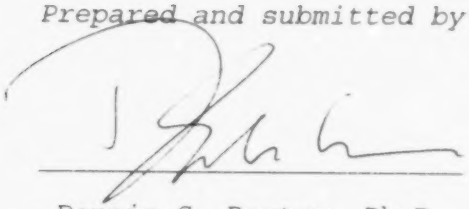
MERCER COUNTY COMMUNITY COLLEGE

NATIONAL WORKPLACE LITERACY PROGRAM

PROJECT PERIOD: November 1, 1993 - August 31, 1995

FINAL PROJECT EXTERNAL EVALUATION REPORT

Prepared and submitted by



Dennis S. Bartow, Ph.D.
External Evaluator

Project # VA198A30142-93
U. S. Department of Education

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OVERVIEW

This evaluation report relates the specific outcomes achieved throughout the 21 month grant period, November 1993 through August 1995. This report reflects the project's external summative evaluation covering the full project period. The interim formative evaluation component and this overall project summative evaluation are based on the formal evaluation plan developed by Mercer County Community College and its Division of Corporate and Community programs, the unit responsible for administering the grant.

The National Workplace Literacy grant program provides funding assistance for demonstration projects that teach literacy skills needed in the workplace through exemplary educational partnerships. In this case, the partnership involves the collaboration of Mercer County Community College with six of its local area employers: Hann & DePalmer, Inc.; M. Grumbacher, Inc.; Rhein Chemie Corporation; McLean Engineering; Setco, Inc.; and Sadat Associates. The six companies vary considerably in size and industry type, and, not surprisingly, have quite different employee literacy needs. This complex mix of corporate participants has afforded the project an opportunity to explore and assess different materials, methodologies, and delivery modes. Training is provided in a variety of literacy skill areas based on employer needs, and is conducted at the various employment sites. The program has provided for precise identification of employer literacy needs through a preliminary

needs assessment, the formulation of a partnership for literacy training, a comprehensive literacy audit by the college team, the development of appropriate training strategies and delivery systems, and, finally, a thorough assessment of the efficacy of training through a comprehensive evaluation component.

The project has been administered by Ms. Elaine Weinberg, who serves as project director. Ms. Weinberg assembled and trained the project staff, which included instructors in the various skill areas. The instructors taught at the various work sites under the supervision of the project director.

The main emphasis of the program was its impact on a target population of 600 employed adults, whose inadequate literacy skills posed a barrier to improved productivity, employment security, and career advancement. Evaluation has focused on the degree to which the program has addressed these problems and the extent to which procedures and methods developed within the program may be effectively employed elsewhere.

ASSESSMENT OF SATISFACTORY ATTAINMENT OF PROJECT GOALS

Goal 1: **To establish a replicable instructional program to develop literacy skills that are both job specific and basic so that participants acquire functional literacy skills that are applicable to the increased skill requirements in their workplace.**

Over the course of more than five years, Mercer County Community College has demonstrated the capability of developing and implementing job-based, customized instructional programs that can be delivered successfully at work sites. Curriculum development is an on-going process at Mercer, and by August 1995, has reached a self-sustaining level. This college is a leader in workplace literacy in the State of New Jersey, and has attracted the support not only of the central New Jersey corporate sector, but a number of state and county agencies, including the New Jersey department of labor and the State Department of Welfare. The six corporate partners in this current project have endorsed the program and have provided testimony to its effectiveness in meeting their training needs.

Goal 2: **To provide a literacy audit at the six partner firms to identify and document literacy needs of the employees and their jobs.**

As part of the project, the staff, early on, worked with the partner firms on a needs assessment to determine the variety of literacy skills associated with each of the jobs under

investigation, as well as the deficits of current employees with respect to these skill needs. In addition to assessing literacy-sensitive tasks and materials, staff set about determining individual levels of worker language proficiency through worker and supervisor interviews. Information derived from the needs assessment phase was then used to shape curriculum development. Customization of curriculum products to accommodate the wide range of language backgrounds and skills, in my judgment, was extremely important in raising the overall effectiveness of the program.

Goal 3: **To offer customized literacy instruction to companies' employees who are in need of basic or technological literacy training to increase their productivity, job retention, retrainability, and career advancement potential.**

The instructional program definitely emphasized the employees' acquisition of functional literacy skills, along with the development of relevant content knowledge based on job requirements. A major component of the program has been the development and implementation of ESL courses. Indeed, it appears that the need for ESL training may overshadow most other requirements.

A substantial number of instructional modules were developed or modified for use alongside pre-packaged instructional courseware. Units included an introductory, *Learn to Learn*, program, as well as modules in English as a Second Language,

Reading, Communication (including writing for the business environment), Elementary Mathematics, and Interpersonal Skills. To the degree possible within staffing and time limitations, modules were modified to reflect particular workplace needs.

Goal 4: **To enhance a supplemental support services in conjunction with the instructional workplace literacy program in order to increase participants' retention and program completion.**

Considerable previous experience convinced the program staff that few employees would be willing to come forward and acknowledge their basic skills deficiencies. Evidently, many fear that their deficiencies will stigmatize and be held against them. Others have had very negative experiences with schooling and doubt their ability to learn. Based on these considerations, the project staff adopted an informal, unstructured, "user friendly" approach to orientation and supportive services.

The staff believe that they were able to encourage participant confidence through personal and professional counseling, as well as emphasis on an individualized educational plan for each employee. Overall, the program achieved a completion rate of 88%. Considering the time constraints imposed on the participating workers and program staff, apart from the fatigue factor, the high completion rate appears to be indicative of a successful support strategy.

Goal 5: **To develop a strong partnership with the six partner firms to ensure the achievement of project objectives and the continuation of the program after the grant period has ended.**

The college staff has done a commendable job of infusing the workplace literacy program into its normal operations. The college's division of corporate and community programs has effectively merged into its customized training offerings, a workplace literacy component. Under the state's new Workforce Development program (WDPP), workplace literacy can be integrated with customized technical skill training and delivered at work sites throughout the state.

As college spokesperson for workplace literacy, project director, Elaine Weinberg, has presented the design and findings of the current project to a wide range of audiences. In addition, articles about the program have been published in a number of professional periodicals, as well as through the ERIC Clearinghouse.

FINDINGS AND RECOMMENDATIONS

Overall, it is the judgment of this evaluator that the project has not only achieved its overall goals, but has operated efficiently and effectively. All six corporate partners have validated the efficacy of the literacy training, although not yet in terms of specific productivity gains. All expressed the desire to continue their relationship with the college to promote employee literacy training. The project director was very effective in maintaining communications among the project staff and with the corporate partners. Based on participant and supervisory feedback, the instructors were highly qualified, experienced, and competent. The corporate partners have committed resources, including space for training, and made their workers available on a reasonable basis. Their participation has been consistent with the overall goals of the program.

All five training cycles prescribed in the grant were satisfactorily completed. In addition, as a result of an extension of the grant, a sixth training cycle was completed. In general, significant proficiency gains are evident in the basic skills areas of reading and computational skills. Based on TABE pre- and post-test results for five of the six firms (Sadat Associates workers were not TABE tested), reading gains averaged 18% (typically about one full grade level for participants pre-tested as below 8th grade level), and computational gains averaged about 25%. English language skill improvement

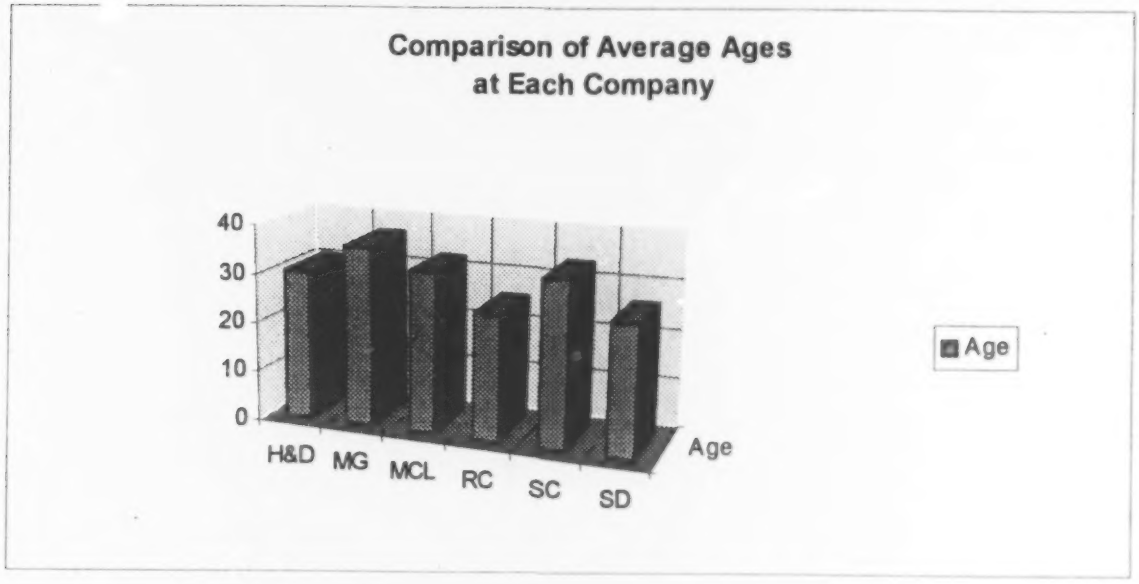
engendered by the ESL course was measured at about 12% overall. This latter figure, however, applies to a wide range of starting language abilities, ranging from workers who did not read or speak English to those who could read English, but whose English language skills were primitive.

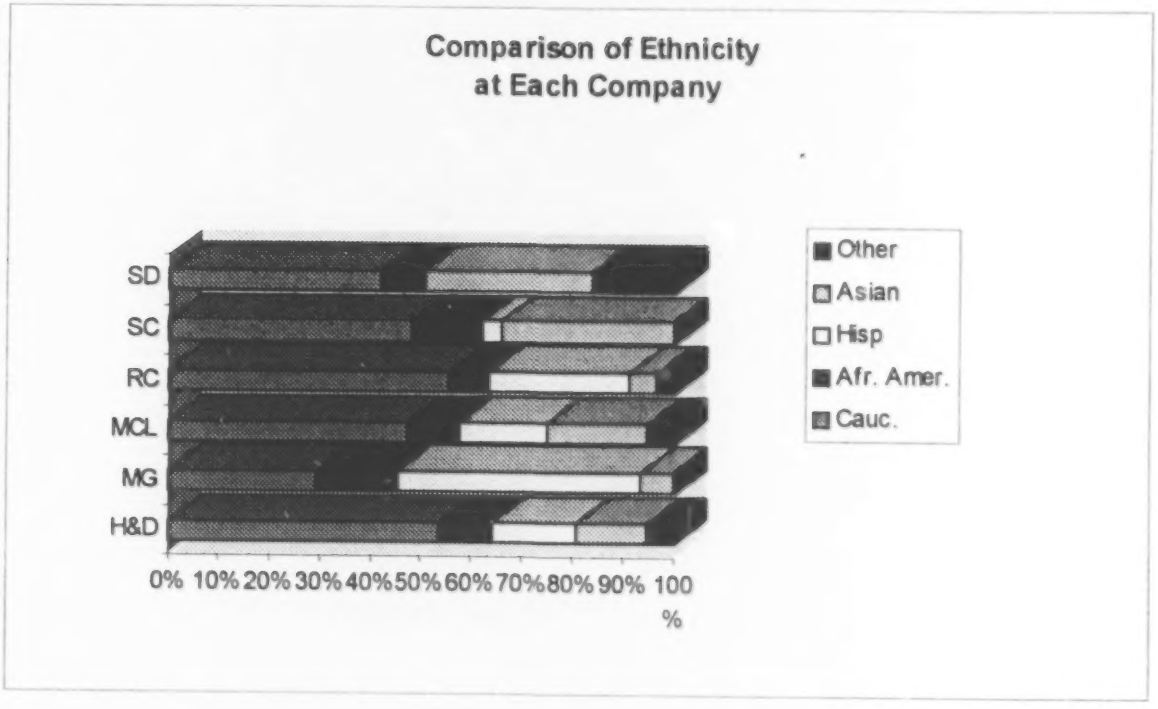
The project experienced some difficulty in locating effective instructional computer software at reasonable cost in the ESL area. Much effective computer-assisted instructional software remains difficult to locate and very expensive to use. The use of DACUM methodology as a cost-effective tool for needs assessment and curriculum development was validated in this project. Most participants believed that DACUM provided a job-oriented approach and contributed to team-building among company supervisors and training staff.

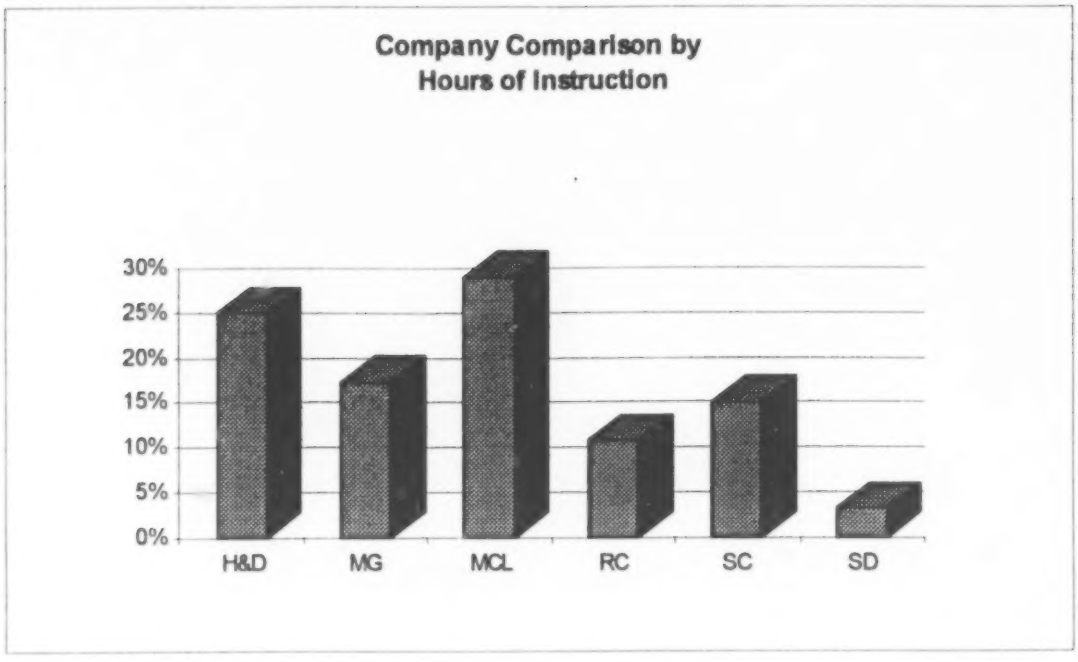
Finally, in the judgment of this evaluator, the project staff is to be commended for its effectiveness in balancing and accommodating both business and educational outcomes. The instructors demonstrated the ability to be both flexible and creative in their approach to teaching within the workplace, allowing the needs of the workers and the company to determine the structure of the training process, rather than vice versa. The project director, in particular, was successful in promoting staff responsiveness and imaginative problem solving, qualities that are essential to successful workplace educational programs.

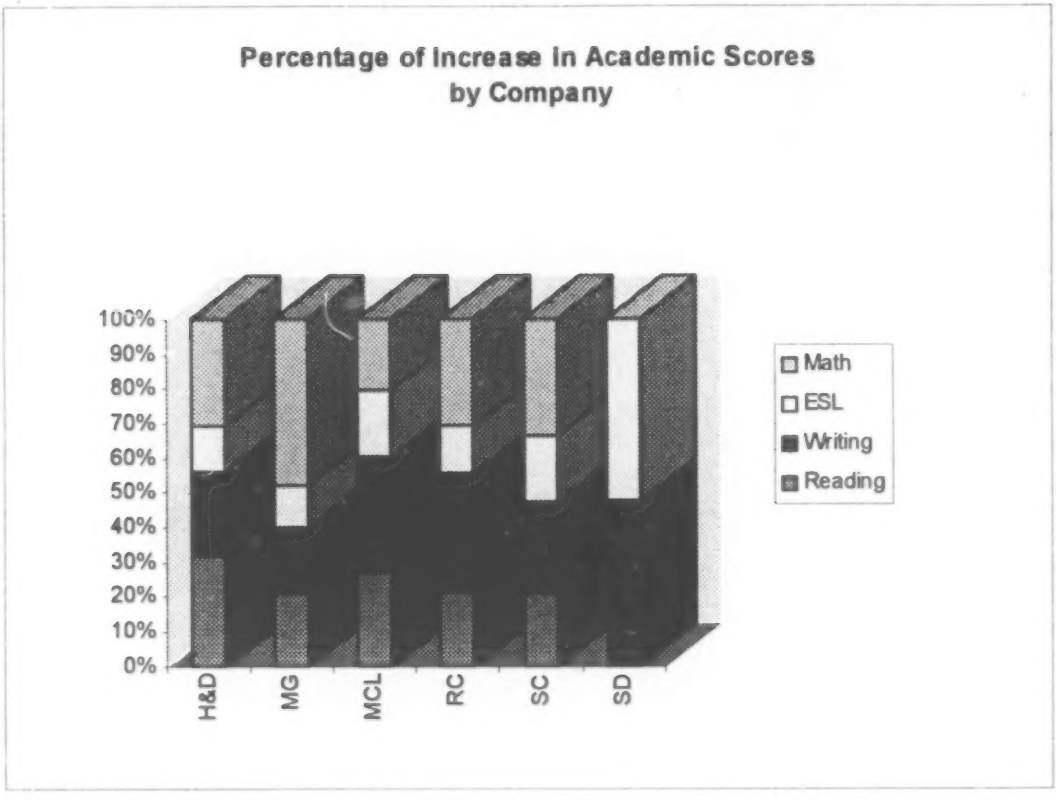
APPENDICES

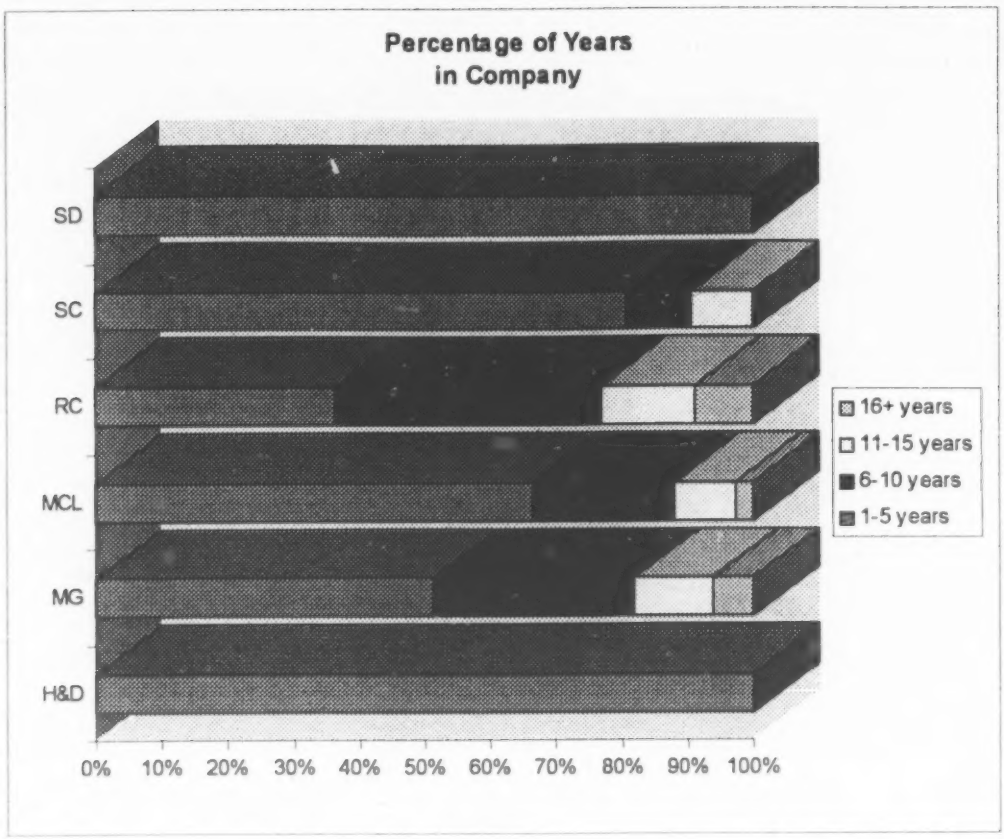
A. DEMOGRAPHIC PROFILE OF COMPANIES

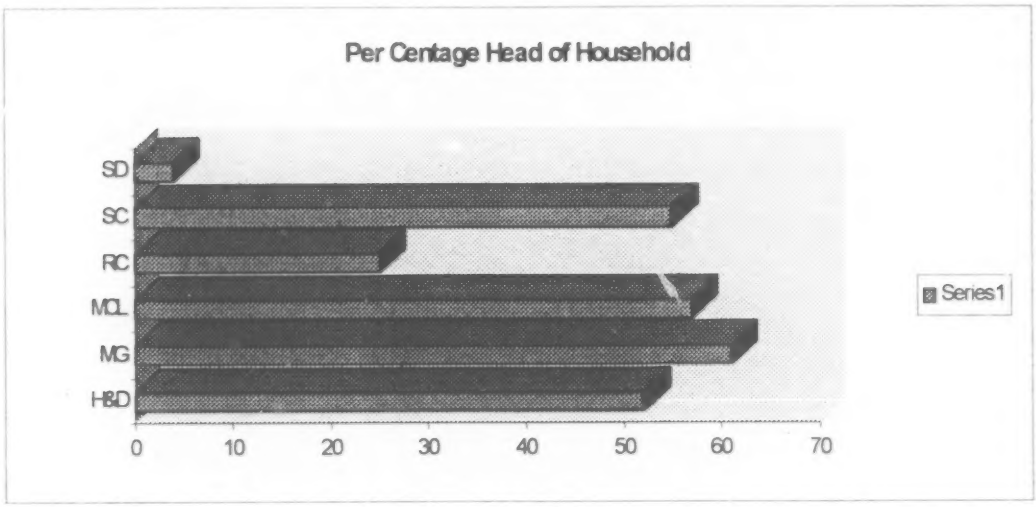


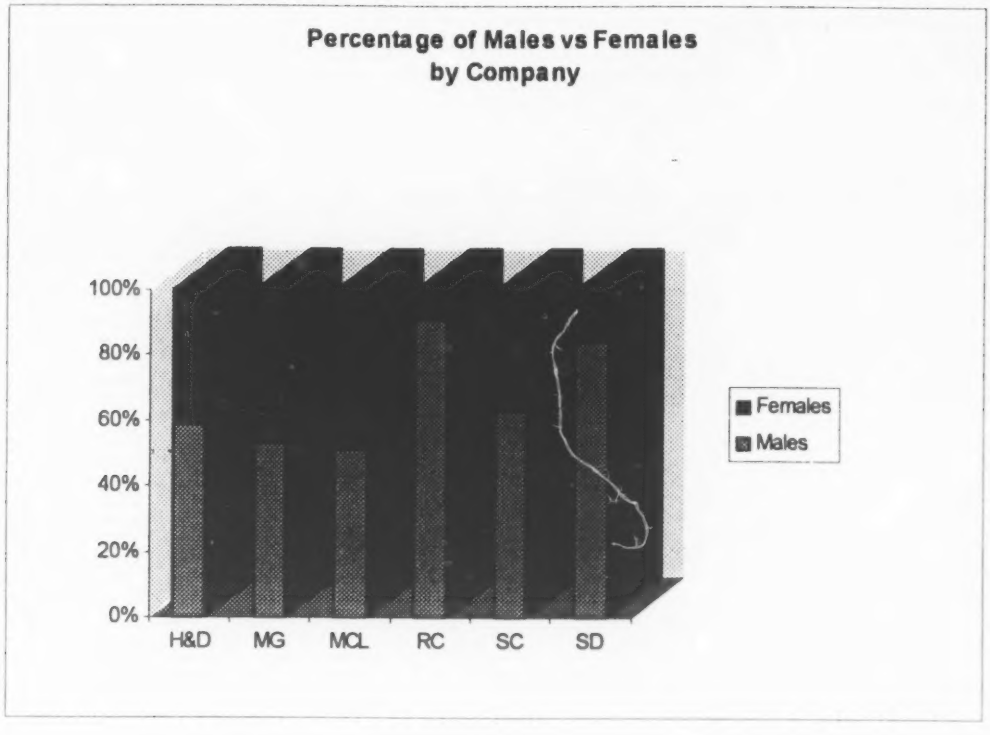



Company Comparison by
Hours of Instruction
30%
25%
20%
15%
10%
5%
0%
H&D
MG
MCL
RC
SC
SD


Percentage of Increase In Academic Scores
by Company
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
H&D
MG
MCL
RC
SC
SD
Math
ESL
Writing
Reading


Percentage of Years
in Company
SD
SC
RC
MCL
MG
H&D
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
16+ years
11-15 years
6-10 years
1-5 years


Per Centage Head of Household
SD
SC
RC
MCL
MG
H&D
0
10
20
30
40
50
60
70
Series1


Percentage of Males vs Females
by Company
100%
80%
60%
40%
20%
0%
H&D
MG
MCL
RC
SC
SD
Females
Males

Workplace Skills Project
Comparison By Grants

Grant 1 March 1991-August 1992		Grant 2 September 1992-February 1993		Grant 3 Nov. 1993-August 31, 1995 Grant extended to 8/31/95	
# of Companies	4	# of Companies	2	# of Companies	6
				Projected # of People	600
Total # of People	625	Total # of People	477	To date	582
Average Age	37	Average Age	34	Average Age	33
% of Males	41%	% of Males	52%	% of Males	61%
% of Females	59%	% of Females	48%	% of Females	39%
# Years with Company		# Years with Company		# Years with Company	
1-5	34%	1-5	48%	1-5	67%
6-10	20%	6-10	25%	6-10	18%
11-15	30%	11-15	7%	11-15	8%
16+	16%	16+	8%	16+	1%
		No Response	12%	No Response	6%
English Speaking	89%	English Speaking	81%	English Speaking	81%
Non-English Speaking	11%	Non-English Speaking	19%	Non-English Speaking	19%
Education		Education		Education	
Less High School	20%	Less High School	24%	Less High School	14%
High School	42%	High School	33%	High School	30%
Some College	26%	Some College	17%	Some College	17%
Degree or Vocation	12%	Degree or Vocation	12%	Degree or Vocation	15%
		No Response	14%	No Response	24%
Race		Race		Race	
Caucasion	69%	Caucasion	61%	Caucasion	42%
African-American	20%	African-American	21%	African-American	13%
Hispanic	8%	Hispanic	12%	Hispanic	20%
Asian	2%	Asian	1%	Asian	17%
Other	1%	Other	5%	Other	8%
Head of Household	41%	Head of Household	9%	Head of Household	22%
% of Improvement		% of Improvement		% of Improvement	
Reading	21%	Reading	22%	Reading	18%
Math	26%	Math*	40%	Math	24%
Science	26%				
Grant 1-Large Manufacturing, Service, Hospital, and Research Compnaies		Benefits to Companies Improved ability to read, write and follow directions Improved communication, especially ESL Improved report writing Improved work aptitude Increased confidence Increased math accuracy More positive view of companies Return to other institutions for additional education Work better with co-workers		Grant 2 -Large Manufacturing (1000+) and Mid-size Service (350) Grant 3 - Manufacturing and Service Companies have less than 200 people	

APPENDIX B
CURRICULUM OVERVIEW

MANUFACTURING AND SERVICE INDUSTRIES

OVERVIEW

One of the most wide-spread causes of unskilled employees in any labor market is a workforce lacking in rudimentary basic skills. Not only does a lack of basic skills competencies in reading, writing, computation, English as a Second Language (ESL) and problem solving effectively bar individuals from any but the most low paying jobs, but it also prevents them from succeeding on the job. For an increasing number of people, the first step toward advancement in the workplace must be remedial education.

The curriculum was developed with the direct assistance of employees of the local companies that are the college's partner in the grant. Curriculum development included a competency-based design process called "DACUM" and the on-going input of a program Advisory Council made up of management and employees in the company.

In addition to courses in specific academic skills, the emphasis will also apply to interpersonal skills, motivation and self-esteem. Involving the employees in the curriculum process heightens the awareness of the importance of their job and a sense of reinforcement of what they know about it. The fact that a program is to be designed based on what they say they want and need to do the job better and to respond to the demands of a dynamic workplace gives them an immediate feeling of ownership.

GENERAL OBJECTIVES

- Employee will be able to recognize, comprehend and interpret all written materials necessary to carry out job responsibilities successfully.
- Employee will be able to use proper punctuation, spelling and grammar to complete forms, routine paperwork and special reports.
- Employee will interact verbally and non verbally with workers at all levels of the organization, and develop skills in the areas of active listening, giving and receiving instructions, discussing work/job needs/requirements and perform as team members.
- Employee will be able to perform basic arithmetic functions, calculate in decimals, weigh, measure, and estimate materials, complete packing and productivity charts and graphs, use decimal time and complete word problems.
- Employee will be able to state the problem, identify and test alternatives, select the best solution, implement action and evaluate results.
- Employee will be able to speak, understand and write in English in order to function effectively, efficiently and safely in the workplace.

Workplace Reading/Writing Curriculum

Objectives: Students will be able to:

- Improve job-related reading/writing skills as they relate to immediate job requirements
- Improve job performance by filling in forms correctly, reading labels, reading and following directions
- Enhance participants' chances of job stability and upward mobility through improved reading/writing skills
- Increase company productivity through improving individual reading capabilities
- Recognize and use job terms
- Interpret symbols, abbreviations, and acronyms
- Apply strategies for dealing with unfamiliar vocabulary
- Use a reading plan to skim, scan and read anything from labels and signs to detailed instructions, memos and articles
- Identify subjects, main ideas, and supporting details of paragraphs, memos and articles
- Follow and give instructions using diagrams, maps and flowcharts
- Write summaries, paragraphs and instructions
- Research information to solve a problem
- Use information to take appropriate action
- Spell with greater confidence and accuracy

Workplace Computation Curriculum

Objectives: Students will be able to:

- Improve job-related computational skills as they relate to immediate job requirements
- Improve overall job performance
- Read, write and count single and multiple-digit whole numbers
- Add, subtract, multiply, divide single and multiple-digit whole numbers
- Solve word problems using whole numbers
- Round off whole numbers
- Read and write common fractions
- Add, subtract, multiply and divide common fractions
- Solve word problems using fractions
- Read and write percentages
- Compute percentages
- Convert fractions to decimals, percentages to fractions, fractions to percents, percents to decimals, and decimals to percentages
- Perform written calculations quickly
- Compute averages
- Read numbers or symbols from time, weight, distance and volume measuring scales
- Use a measuring device to determine an object's weight, distance, or volume in English/Metric units
- Use a calculator to perform basic arithmetic operations to solve problems

Workplace Oral Communication Curriculum

Objectives: Students will be able to:

- Improve their on-the-job oral communication skills
- Recognize their own style of communicating
- Describe three types of communication; Vocal, Non-verbal, Verbal
- Use active listening strategy
- Describe four styles of listening; relaxed listening, social listening, active listening and defensive listening
- Use strategies to resolve conflict and problems

- Organize and present ideas
- Work towards consensus and team building
- Make a good "first impression" on co-workers
- Recognize how first impressions are formed in the first two to four minutes of a communication exchange
- Identify and use positive body language
- Identify and avoid negative body language

Workplace Problem Solving Techniques Curriculum

Objectives: Students will be able to:

- Describe and analyze problems encountered at work
- Use individual and/or group problem solving techniques to improve on-the-job success and productivity
- Use an orderly, step by step process to solve problems
- Apply creativity to the problem solving process
- Use the brainstorming technique to help solve problems
- Become adept at using problem analysis techniques for all types of problems (work or personal)

Workplace English as a Second Language Curriculum

Objectives: Students will be able to:

- Improve oral on-the-job English communication skills
- Ask for and understand oral instructions
- Read and use the literature in the workplace
- Communicate effectively with co-workers
- Build a working English vocabulary for the workplace
- Ask grammatically correct questions in various tenses
- Give grammatically correct answers in various tenses

OVERVIEW OF SMALL MANUFACTURING (UNDER 50) OPERATE HEAVY MACHINERY

Core Competencies

- Workers will be able to reason and problem solve in order to improve communication on and between shifts.
- Reduce absenteeism by 2% for all employees.
- Customer orders will be labeled properly, correctly matched to their contents, and filled accurately to reduce external complaints.
- Improve employee team building through more effective communication and clearer instruction.
- Workers will spend less time following directions on the floor and be able to resolve conflicts among co-workers and supervisors, thereby reducing rework time and material usage time by 10%.

- Workers will be able to reason and problem solve in order to improve communication on and between shifts.

At the end of classes workers will be able to:

1. Read a list on instructions, checklist, drawings, manifests, metal labels and job-aids.
2. Estimate amount of time needed to complete job task.
3. Calculate the number of hours needed to complete job task.
4. Write a description of a QC problem and complete QC hold tag accurately.
5. Identify substandard products and the reasons.
6. Calculate number of pieces completed during a specific time period.
7. Report completion of task to the supervisor.
8. Communicate better with the lead person.
9. Read/write product labels accurately in order to properly assemble product.
10. Follow and give oral directions to assemble product.
11. Compare the computer work order against the inventory list and update when necessary.
12. Calculate skid height, weight, and product count and place in appropriate location according to size of skid and available space in warehouse when assembly is complete.
13. Follow the GMP better by reading manuals.
14. Read packing patterns, diagrams with instructions, hold tags, red tags, raw material tags, material transfer form, scrap report.
15. Review log book with group leader from previous shift.
16. Read run sheet to set up machines.
17. Read chemicals to make better recycling decisions.
18. Read procedures that will allow the workers to increase efficiency and ownership of their area.

- Reduce absenteeism by 2% for all employees.

At the end of classes workers will be able to:

1. Listen efficiently at meetings in order to improve work habits and produce a quality product.
2. Verbally communicate with supervisor to discuss ways of increasing quality and decreasing errors.
3. Cooperate with fellow employees to maintain cleanliness in company by following GMP and taking ownership of job area.
4. Communicate with other departments using better interpersonal skills either verbally or in writing to notify appropriate people of any safety issues.

5. Use an orderly, step by step process to solve problems that disrupt the home/work balance in order to reduce the chances of absenteeism.
6. Use individual and/or group problem solving techniques to improve on-the-job success and productivity.
7. Give appropriate reason for absence or tardiness in person or on the phone.
8. Request permission to take time off, leave early or change a work schedule.
9. Read a procedural handbook/manual that will allow workers to increase efficiency and productivity and lower their absentee rate.

- Customer orders will be labeled properly, correctly matched to their contents, and filled accurately to reduce external complaints.

  At the end of classes workers will be able to:

  1. Read posters, memos, bulletin boards and display boards in order to pay attention to quality control and management suggestions.
  2. Improve listening skills at crew meetings and shift meeting that will allow worker to improve on their work habits and efficiency in producing a quality project.
  3. Verbally communicate with group leaders and supervisors and look for ways to increase quality and decrease errors.
  4. Read and complete tags and labels properly so that product is shipped properly and quality checked prior to being shipped to customer.
  5. Improve their decision making skills to make sure there are no contaminated or inferior product being shipped to customer.

- Improve employee team building through more effective communication and clearer instruction.

  At the end of classes workers will be able to:

  1. Read and write instructions and signs, forms, company material, notes, memos, lab reports, drawings, work order and return sheet.
  2. Follow the GMP better by reading manuals including (OSHA) safety manuals and laboratory manuals.
  3. Read drawings, diagrams with instructions, manifests, metal labels, machine gauges.
  4. Read work order and machine manuals to set up machines.
  5. Give and follow oral directions.
  6. Read/label metal/chemicals for proper recycling disposal and/or storage in warehouse.
  7. Communicate better with lead person.

- Workers will spend less time following directions on the floor and be able to resolve conflicts among co-workers and supervisors, thereby reducing rework time and material usage time by 10%.

  At the end of classes workers will be able to:

  1. Cooperate with others to maintain cleanliness of plant by reading employee handbook and GMP guide book.
  2. Monitor operations and notify packers and utility personnel through proper communication channels.
  3. Manage time efficiently and prioritize work needs.
  4. Log mechanical problems and explain to supervisor at crew meeting nature of problem and suggest possible solutions.
  5. Communicate either verbally or in writing to other departments using better interpersonal skills to notify appropriate people of any immediate safety issues.

SMALL MANUFACTURER-(UNDER 100)
ASSEMBLERS

Core Competencies

- Workers will show a 10% improvement in the output per man hour using the formula: *factory production ÷ number of man hours* established by HRD.
- Workers will show a 10% improvement in the cycle count taken in the warehouse verifying the proper placement of inventory.
- Workers will complete labor cards with 100% accuracy and without assistance from supervisors.
- Workers will show a 10% decrease in scrap and a 10% increase in their yield using the Material Usage Variance formula established by HRD.
- Workers will reduce shipping errors by recording the correct item number, correct count and transfer this information to the computer.
- Workers will reduce the time it takes to receive/give instructions by 10% by demonstrating improvement in reading, comprehension and oral communication.

- Workers will show a 10% improvement in the output per man hour using the formula: *factory production ÷ number of man hours* established by HRD.

  At the end of classes workers will be able to:

  1. Read a list on instructions, checklist, Kit Picking Report, pack patterns, manifests, drum labels and job-aids.
  2. Estimate amount of time needed to complete job task.
  3. Calculate the number of hours needed to complete job task.
  4. Write a description of a QC problem and complete QC hold tag accurately.
  5. Identify substandard products and the reasons.
  6. Calculate number of pieces completed during a specific time period.
  7. Report completion of task to the supervisor.

- Workers will show a 10% improvement in the cycle count taken in the warehouse verifying the proper placement of inventory.

  At the end of classes workers will be able to:

  1. Communicate better with the receiving clerk and hi/lo operator.
  2. Read/write inventory label accurately in order to properly transfer inventory.
  3. Follow and give oral directions to locate an object or place.
  4. Compare the computer list against the inventory list and update when necessary.
  5. Calculate skid height, weight, and product count and place in appropriate location according to size of skid and available space in warehouse.
  6. Read "QC hold" label more carefully and store rejected material in proper staging area.
  7. Label and date material drums with appropriate information for transfer to staging area or warehouse.

- Workers will complete labor cards with 100% accuracy and without assistance from supervisors.

  At the end of classes workers will be able to:

  1. Read/complete/write time card before and after a job task.
  2. Proofread and check the labor card for accuracy.
  3. Perform basic +, -, x, ÷ in completing labor card.
  4. Submit completed labor cards on a timely basis.
  5. Estimate amount of time needed to complete job task.
  6. Calculate the amount of time needed to complete job task.

- Workers will show a 10% decrease in scrap and a 10% increase in their yield using the Material Usage Variance formula established by HRD.

  At the end of classes workers will be able to:

  1. Calculate the amount of scrap at the end of the job jacket.
  2. Calculate the yield of the job task.
  3. Estimate material needed during a specific time period.
  4. Estimate amount of supplies needed to complete job task.
  5. Calculate amount of time needed to complete job task.
  6. Follow and give oral/written report to supervisor when job task is complete.

- Workers will reduce shipping errors by recording the correct item number, correct count and transfer this information to the computer.

  At the end of classes workers will be able to:

  1. Follow verbal and written instruction from supervisor.
  2. Communicate better with the hi/lo operator and truck drivers to expedite shipping.
  3. Read order list more carefully pertaining to identifying product.
  4. Read "QC hold" label more carefully pertaining to rejected material.
  5. Input data inventory into computer system more accurately.
  6. Write and complete necessary paperwork (manifest order, work list, label) for proper shipping.
  7. Accurately calculate the cost of shipping, check weight of skid, check manifest order on skid, complete bill of lading and weight list.

- Workers will reduce the time it takes to receive/give instructions by 10% by demonstrating improvement in reading, comprehension and oral communication.

  At the end of classes workers will be able to:

  1. Read and write instructions and signs, forms, company material, notes, memos, lab reports, Kit Picking Reports, work order and return sheet.
  2. Follow the GMP better by reading manuals including (OSHA) safety manuals and laboratory manuals.
  3. Read packing patterns, diagrams with instructions, manifests, drum labels, Kit Picking Reports.
  4. Read work order and machine manuals to set up machines.
  5. Give and follow oral directions.
  6. Read/label chemicals for proper recycling disposal and/or storage in warehouse.

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OVERVIEW OF MANUFACTURER (UNDER 200 EMPLOYEES) ASSEMBLERS, ASSISTANT AND GROUP LEADERS

Core Competencies

- Reduce absenteeism by 2% for all employees
- Workers will show a 10% decrease in scrap by improving reading, paying closer attention to the drawing, and by completing work according to specifications. They will not transpose numbers.
- Reduce the employee turnover rate by 10% through better working conditions demonstrated by more effective communication and clearer instruction.
- Improve quality by reducing the line rejects and returns from the customer by 10%.
- Workers will show a 10% improvement in output per man hour through better communication and listening skills.

- Reduce absenteeism by 2% for all employees

  At the end of classes workers will be able to:

  1. Listen better at meetings in order to improve work habits and produce a quality product.
  2. Verbally communicate with supervisor to discuss ways of increasing quality and decreasing errors.
  3. Cooperate with fellow employees to maintain cleanliness in company by following GMP and taking ownership of their job area.
  4. Communicate with other departments using better interpersonal skills either verbally or in writing to immediately notify appropriate people of any safety issues.
  5. Use an orderly, step by step process to solve problems that disrupt the home/work balance in order to reduce the chances of absenteeism.
  6. Use individual and/or group problem solving techniques to improve on-the-job success and productivity.
  7. Give appropriate reason for absence or tardiness in person or on the phone.
  8. Request permission to take time off, leave early or change a work schedule.
  9. Read a procedure handbook/manual that will allow workers to increase efficiency and productivity and lower their absentee rate.

- Workers will show a 10% decrease in scrap by improving reading, paying closer attention to the drawing, and by completing work according to specifications. They will not transpose numbers.

  At the end of classes workers will be able to:

  1. Calculate the amount of scrap at the end of the job order.
  2. Calculate the yield of the task.
  3. Estimate material needed during a specific time period.
  4. Estimate amount of supplies needed to complete task.
  5. Calculate amount of time needed to complete task.
  6. Follow and give oral/written report to supervisor when task is complete.
  7. Proofread memos, letters, job order reports for number transposition errors.

- Reduce the employee turnover rate by 10% through better working conditions demonstrated by more effective communication and clearer instruction.

  At the end of classes workers will be able to:

  1. Read and write instructions and signs, forms, company material, notes, memos, lab reports, drawings, work order and return sheet.
  2. Follow the GMP better by reading manuals including (OSHA) safety manuals and laboratory manuals.
  3. Read drawings, diagrams with instructions, manifests, metal labels, machine gauges.
  4. Read work order and machine manuals to set up machines.
  5. Give and follow oral directions.
  6. Read/label metal/chemicals for proper recycling disposal and/or storage in warehouse.
  7. Communicate better with lead person.

- Improve quality by reducing the line rejects and returns from the customer by 10%.

  At the end of classes workers will be able to:

  1. Track the transfer from assembly to shipping and record any errors.
  2. Complete Inventory Error Report.
  3. Accurately calculate shipping costs, check weight of shipment and read destination number on work order.
  4. Write and complete necessary paperwork for work order.
  5. Input data into inventory properly.
  6. Follow verbal and written instruction from supervisor.
  7. Communicate more effectively with lead person.
  8. Read drawing more accurately to identify product.
  9. Read posters, memos, bulletin boards and display boards in order to monitor quality control and management suggestions.
  10. Improve listening skills at company meetings to improve work habits and efficiency in producing a quality project.
  11. Verbally communicate with group leaders and supervisors to look for ways to increase quality and decrease errors.
  12. Read and complete tags and labels properly so product is quality checked and shipped properly prior to being sent to customer.
  13. Improve decision making skills to assure no incorrect or inferior product is shipped to customer.
  14. State problem and ask supervisor or co-worker for help as necessary.
  15. Identify substandard products and the reasons.

- Workers will show a 10% improvement in output per man hour through better communication and listening skills.

  At the end of classes workers will be able to:

  1. Read a list of instructions, checklist, drawings, manifests, metal labels and job-aids.
  2. Estimate amount of time needed to complete job task.
  3. Calculate number of hours needed to complete job task.
  4. Write a description of a QC problem and complete QC hold tag accurately.
  5. Identify substandard products and reasons.
  6. Calculate number of pieces completed during a specific time period.
  7. Report completion of task to the supervisor.
  8. Communicate better with lead person.
  9. Read/write product labels accurately in order to properly assemble product.
  10. Follow and give oral directions to assemble product.

OVERVIEW OF HIGH TECHNOLOGY MANUFACTURER (200 EMPLOYEES)

Core Competencies

- Workers will reduce the time it takes to give/receive instructions by 10% by demonstrating improvement in reading, comprehension, and oral communication.
- Customers complaints will decrease when all labels are correctly matched to their contents and product orders are filled accurately.
- Workers will complete labor cards properly and avoid improper tagging.
- Workers will reduce shipping errors by recording the correct item number, correct count, and properly input the correct information into the computer.
- Workers will store products in the proper places in the warehouse.
- Workers will begin to learn how to read blueprints and article drawings including legends.
- Workers will improve their math skills in +, -, x, +, estimating, from whole numbers through fractions and decimals to weigh, pack and ship in a cost effective way.
- Workers will spend 10% less time having arguments on the floor and with other employees in order to save rework time and material usage time.
- Workers will be able to reason and problem solve.

- Workers will reduce the time it takes to give/receive instructions by 10% by demonstrating improvement in reading, comprehension and oral communication.

At the end of classes workers will be able to:

1. Read and write instructions and signs, forms, company material, notes and memos.
2. Follow the GMP better by reading manuals.
3. Read packing patterns, diagrams with instructions, hold tags, red tags, raw material tags, material transfer form, scrap report.
4. Review log book with group leader from previous shift.
5. Read run sheet to set up machines.
6. Read chemicals to make better recycling decisions.
7. Read procedures that will allow the workers to increase efficiency and ownership of their area.

- Customers complaints will decrease when all labels are correctly matched to their contents and product orders are filled accurately.

At the end of classes workers will be able to:

1. Read posters, memos, bulletin boards and display boards in order to pay attention to quality control and management suggestions.

2. Improve listening skills at crew meetings and shift meeting that will allow worker to improve on their work habits and efficiency in producing a quality project.
3. Verbally communicate with group leaders and supervisors and look for ways to increase quality and decrease errors.
4. Read and complete tags and labels properly so that product is shipped properly and quality checked prior to being shipped to customer.
5. Improve their decision making skills to make sure there are no contaminated or inferior designed bottles being shipped to customer.

- Workers will reduce shipping errors by recording the correct item number, correct count and properly input the correct information into the computer.

  At the end of classes workers will be able to:

  1. Follow verbal and written instruction from group leader or supervisor for obtaining internal hold tags or red tags from appropriate sources.
  2. Read tags more carefully pertaining to product defects.
  3. Visually check and decide on a good bottle versus a bad bottle with better speed and accuracy.
  4. Write and complete necessary paperwork (material tag, transfer, work order, label) for proper storage in warehouse or shipping.
  5. Communicate better with process technicians when they find error with robot.

- Workers will store products in the proper places in the warehouse.

  Upon completion of classes workers will be able to:

  1. Initial and tag material correct and more efficiently for transfer to warehouse.
  2. Place gaylords in proper staging for storage in warehouse.
  3. Place properly completed label on boxes that are to be stored or shipped.
  4. Oversee the proper disposal of garbage to warehouse by reading labels and deciding if product is scrap, recyclable, or waste.

- Workers will begin to learn how to read blueprints and article drawings including legends.

  Upon completing a pre-blueprint math class workers will be able to:

  1. Measure bottles in inches to the thousandth of an inch.
  2. Estimate, +, -, x, +, decimals and fractions.
  3. Read a simple blueprint and seek out employee career advancement opportunities within the company with this newly acquired knowledge.

- Workers will improve their math skills in +, -, x, +, estimating from whole numbers through fractions and decimals to weigh, pack and ship in a cost effective way.

  Upon completion of classes workers will be able to:

  1. Read code numbers, blend tallies to check order, calculate number of cases per pallet with greater accuracy.
  2. Read, write, compare code numbers to resin, regrind color by writing weight in pounds and compare weight with percentage of customer requirements.
  3. Chart color percentage, graph/plot result of "white" percentage in the color and resin samples.
  4. Weigh materials, resin color, purgings more accurately.

5. Order packaging materials with material transfer form and calculate the proper box size for the number of bottles.
6. Identify defects by averaging bottle dimension measurements that are taken with calipers in two locations on the bottle.
7. Read SPC chart and reduce the math errors in calculating mean, mode and medium.

- Workers will spend 10% less time having arguments on the floor and with other employees in order to save rework time and material usage time.

Upon completion of classes workers will be able to:

1. Cooperate with others to maintain cleanliness of plant by reading employee handbook and GMP guide book.
2. Monitor operations and notify packers and utility personnel through proper communication channels.
3. Tend to "help lights" quicker by managing their time more efficiently and prioritizing workers' needs.
4. Decrease "in-fighting" by attending brainstorming sessions that could be held in shift meetings and crew meetings.
5. Log mechanical problems and explain to supervisor at crew meeting what the problem is and suggest possible solutions.
6. Communicate to other departments using better interpersonal skills either verbally or written to notify appropriate people of any safety issues immediately.

OVERVIEW OF RESEARCH SERVICE ORGANIZATION (UNDER 50 EMPLOYEES)

Core Competencies

- Workers will show improvement in fluency in conversations and presentations to clients and co-workers.
- Workers will improve communication skills through the proper use of idioms and anecdotes when relating to each other, clients, agencies and subcontractors.
- Workers will improve written and oral communications when presenting findings and reports to clients, there will be an improvement in clear, simple and organized thoughts in both listening and speaking skills between managers and technicians.
- Workers will show improvement by demonstrating effective telephone techniques, listening skills, message-taking, customer/client understanding and managing the customer/client perception of the company through proper phone techniques.

- Workers will show improvement in fluency in conversations and presentations to clients and co-workers.

  At the end of classes workers will be able to:

  1. Communicate more effectively with co-workers, at staff meetings and informally at the office.
  2. Improve listening skills and allow improvement of work habits to efficiently produce a quality project.
  3. Verbally communicate with co-workers and supervisors to look for ways to increase quality and decrease errors.
  4. Improve their decision making skills and present findings in a clear, simple and organized manner.
  5. Report completion of task to supervisor.
  6. Communicate to other departments using better interpersonal skills.

- Workers will improve communication skills through the proper use of idioms and anecdotes when relating to each other, clients, agencies and subcontractors.

  At the end of classes workers will be able to:

  1. Follow verbal and written instruction from supervisor.
  2. Give and follow oral directions.
  3. Read and use memos, letters and technical reports to communicate with clients.
  4. Improve oral presentation skills by using expressions that relate to the audience and/or prospective client, and by inserting short accounts of incidents that relate to the presentation when appropriate.

- Workers will improve written and oral communications when presenting findings and reports to clients, there will be an improvement in clear, simple and organized thoughts in both listening and speaking skills between managers and technicians.

  At the end of classes workers will be able to:

  1. Read government regulations and summarize meaning.

2. Present findings and report in writing and orally to supervisors.
3. Improve clarity of technical reports for comprehension by engineers, scientists, support staffs and clients.
4. Improve presentation of findings to task force and public meeting by demonstrating clarity, simplicity, and organization skills.
5. Improve communication among employees as they interact with each other, clients, agencies and subcontractors.

- Workers will show improvement by demonstrating effective telephone techniques listening skills, message-taking, customer/client understanding and managing the customer/client perception of the company through proper phone techniques.

  At the end of classes workers will be able to:

  1. Make an effective telephone call, identify himself/herself, establish the convenience of the call, express the purpose of the call, use a good telephone voice, avoid miscommunication and bring the call to a conclusion.
  2. Prepare for incoming calls, answer the telephone, screen calls, place callers on hold, transfer a call and keep records of calls.
  3. Take a telephone message using a standard message format.
  4. Plan outgoing telephone calls, to recognize the different types of telephone calls, and to know how the time zones affect calls and their cost.
  5. Identify the different types of telephone equipment, to use voice mail properly and list recent trends in the telephone industry.
  6. Handle request calls, collection calls, appointments and complaint calls and the concept of telemarketing.

OVERVIEW OF SERVICE (UNDER 100 EMPLOYEES)
PIC PACK, ASSEMBLERS, LINE LEADERS

Core Competencies

- Workers will show improvement in their reading, comprehension and oral communications by demonstrating 10% fewer errors in reading instructions.
- Customer complaints will decrease when products are filled accurately.
- Workers will complete labor cards properly.
- Workers will reduce errors by recording the correct item number, correct count and properly input the correct information into the computer.
- Workers will store products in proper places in the warehouse.
- Workers will improve their math skills in +, -, x, +, estimating, from whole numbers through fractions and decimals to weigh, pack and ship in a cost effective way.
- Workers will learn how to transact business in a more professional way.
- Workers will be able to reason and problem solve in order to determine ways to save time and materials.

- Workers will show improvement in their reading, comprehension and oral communications by demonstrating 10% fewer errors in reading instructions.

At the end of classes workers will be able to:

1. Read/complete Inventory Report.
2. Read/complete Pitney Bowes Edit Report.
3. Read a job jacket and check for completeness of information.
4. Read and write instructions and signs, forms, company material, notes, memos, lab reports, Pick tickets, Job tickets and return sheets.
5. Communicate with customer service representative.
6. Write special instructions on pick list.
7. Prioritize job ticket on job board and plan on how to pick order efficiently.

- Customer complaints will decrease when products are filled accurately.

At the end of classes workers will be able to:

1. Read posters, memos, bulletin boards and display boards in order to pay attention to quality control and management suggestions.
2. Improve listening skills at company meetings that will allow workers to improve on their work habits and efficiency in producing a quality project.

3. Verbally communicate with group leaders and supervisors and look for ways to increase quality and decrease errors.
4. Read and complete tags and labels properly so that product is shipped properly and quality checked prior to being shipped to customer.
5. Improve their decision making skills to assure that no incorrect or inferior product is shipped to a customer.
6. State a problem and ask supervisor or co-worker for help as necessary.
7. Identify substandard products and the reasons.

- Workers will complete labor cards properly.

  At the end of classes workers will be able to:

  1. Read/complete/write time card before and after a job task.
  2. Proofread and check the labor card for accuracy.
  3. Perform basic +, -, x, + in completing labor card.
  4. Submit completed labor cards on a timely basis.
  5. Estimate amount of time needed to complete job task.
  6. Calculate the amount of time needed to complete job task.
  7. Report errors on labor card.
  8. Report completion of task to supervisor.

- Workers will reduce errors by recording the correct item number, correct count and properly input the correct information into the computer.

  At the end of classes workers will be able to:

  1. Track the transfer from pick/pack to shipping and record any errors.
  2. Complete Inventory Error Report.
  3. Accurately calculate shipping costs, check weight of pick ticket and read destination number on pick ticket.
  4. Write and complete necessary paperwork for job jacket.
  5. Input data into inventory properly from a receiving report, rewarehousing report and to check for similar stock.
  6. Follow verbal and written instruction from supervisor.
  7. Communicate better with hi/lo operator.
  8. Read job jacket more carefully pertaining to identifying the product.

- Workers will store products in proper places in the warehouse.

  At the end of classes workers will be able to:

  1. Read/compare load and unload sheets and look for variances.
  2. Initial and tag product correctly for transfer to warehouse.
  3. Communicate better with the receiving clerk and hi/lo operator.
  4. Read/write inventory label accurately in order to ship or store product.
  5. Follow/give oral directions to locate an object or a place.
  6. Compare the computer list against the inventory list and update as necessary.
  7. Calculate skid height, weight and count and place in correct location in the warehouse.
  8. Read/complete "QC tag" and store rejected products in staging area.
  9. Identify premium items or transfer to "cage."

- Workers will improve their math skills in +, -, x, +, estimating, from whole numbers through fractions and decimals to weigh, pack and ship in a cost effective way.

At the end of classes workers will be able to:

1. Calculate variances between pick list and the quality checker.
2. Complete/write quote logs.
3. Read code numbers, blend tallies to check order and calculate number of cases per pallet.
4. Read, write, compare code numbers on pick list to inventory.
5. Calculate tare weight.
6. Calculate number of items needed to complete job task.
7. Calculate number of items completed during a specific time period.
8. Complete labor card.

- Workers will learn how to transact business in a more professional way.

At the end of classes workers will be able to:

1. Read posters, memos, bulletin boards and display boards in order to improve quality control and follow procedures.
2. Listen better at meetings in order to improve on work habits and producing a quality product.
3. Verbally communicate with supervisor to discuss ways of increasing quality and decreasing errors.
4. Read and complete tags, labels and paperwork to assure that product is QC'd prior to being shipped to customer.
5. Communicate to other departments using better interpersonal skills.
6. Oral/written communication to notify supervisor of any safety issues.
7. Cooperate with others to maintain cleanliness in company by following GMP and taking ownership of their area.
8. Complete quarterly profiles as assigned by management.

- Workers will be able to reason and problem solve in order to determine ways to save time and materials.

At the end of classes workers will be able to:

1. Read pick/pack instructions, checklists, job aids and job jackets.
2. Estimate amount of time needed to complete job task.
3. Calculate the number of hours needed to complete job task.
4. Identify substandard products and the reason for supervisor and co-workers.
5. Estimate number of pieces to be completed during a specific time period.
6. Calculate number of pieces completed during a specific time period.
7. Report completion of task to supervisor.
8. Complete profile of activities form as assigned by management.
9. Accurately complete labor cards.
10. Accurately calculate the cost of shipping, check weight of skid, check manifest, complete bill of lading and weigh product.

APPENDIX C
CURRICULUM OUTLINES

READING

INTERPRETING COMPANY MATERIALS

Words are all around us. We need to be able to understand the messages they give us and to use these words to communicate with others to perform our jobs efficiently. This course will help students interpret and make better use of the signs, notices, forms, memos and instructions that they come across at work.

OBJECTIVES:

Upon completion of this course, students will be able to do the following:

- recognize and use job terms
- interpret symbols, abbreviations, and acronyms
- discriminate between and use different numbers and codes
- read and use company literature
  e.g. labels, signs and company forms
- follow and give instructions
- write summaries, paragraphs, and instructions
- use information to take appropriate action
- use improved language skills to problem solve

TOPICAL OUTLINE:

- job terms
- abbreviations, acronyms, and pictorial symbols
- working with codes and numbers
- subjects and verbs
- singulars and plurals
- sentence structure
- paragraphs
- interpreting forms
- filling out forms
- schedules
- reading and interpreting instructions
- writing instructions
- strategies for dealing with unfamiliar vocabulary
- spelling and pronunciation
- reading for information
- reading and interpreting maps and diagrams
- using maps and diagrams to instruct others

EVALUATION:

- students will be evaluated at the start and finish of every course with pre and post-tests
- improvement in learning techniques will be evaluated based on performance in class and on worksheets
- students will perform self-evaluations based on correct completion of worksheets

EVALUATION APPLICABLE IN THE WORKPLACE:

At the end of this course, students will perform more effectively in the workplace:

- Students will be more competent at number use and discrimination. This competency will reduce the number of job errors that revolve around the use of forms, material code numbers, labels, and directions.

- Students will be better able to respond to the forms, maps and diagrams they see around them. They will be able to record their own schedules, report errors and record other information, making them less reliant on their supervisors.

- Students will be more adept at giving and receiving instructions, both written and oral. This will enhance their ability to perform jobs on the line and make fewer errors in completion of those tasks.

COMPLEX MATERIALS: DECODING THE FACTS

COURSE OUTLINE:

This course is designed for employees who want to increase their comprehension of more complex reading materials in the workplace. By developing strategies to identify and respond accurately and efficiently to written messages, employees will make themselves more competent, and therefore more valuable. The course will use a variety of materials from the workplace, including forms, memos, letters, and reports. Students will learn skills for improving vocabulary, as well as reading actively for information.

OBJECTIVES:

Upon completion of this course, students will be able to do the following:

- use a reading strategy to skim, scan and read in detail an assortment of reading materials
- use the dictionary effectively
- apply strategies for dealing with unfamiliar vocabulary
- identify subjects, main ideas and supporting details of paragraphs, memos, letters and reports
- summarize and report on information they have read, both orally and in writing
- fill out more complex forms
- read more complex reports

TOPICAL OUTLINE:

- developing a reading strategy
- skimming and previewing
- using the dictionary effectively
- strategies for dealing with unfamiliar vocabulary
- frequently confused words
- identifying subjects, main ideas and supporting details
- responding to memos and letters
- filling out more complex forms
- reading reports

PRESENTATION SKILLS

COURSE OUTLINE:

Employees need to be able to put forward their ideas clearly and persuasively. This course takes students through the process of presenting ideas, from preparing themselves and their materials to standing up and speaking in front of an audience.

OBJECTIVES:

Upon completion of this course, students will be able to do the following:

- identify the traits of good and bad speakers
- use strategies to relieve presentation stress
- prepare a presentation for different lengths of time
- brainstorm to select an appropriate topic
- identify different audiences and situations
- research, write and organize information
- create and use effective visual aids
- conduct effective Question and Answer sessions
- give coherent presentations
- give and receive constructive feedback

METHODS:

- guided group discussions
- individual reading and writing
- constant practice speaking in front of the class

WRITING

MEMO WRITING

In order to write clear and effective memos, employees must be aware of their writing style, their grammar, tone and organization. This course will enable students to write more accurate and concise memos and be better able to deal with difficult memo writing situations in the workplace.

OBJECTIVES:

At the end of this course, students will be able to do the following:

- recognize their audience
- name their topic/main idea before writing
- organize their writing time using the 4 steps
- use the standard memo format
- write complete sentences
- brainstorm
- use correct punctuation
- get their point across using clear and specific words
  recognize and avoid bad writing: redundancies, repetition, wrong usage, wordiness
- write memos that have a clear and strong intended action/effect
- write memos that are reader friendly (using bullets, lists, numbers, etc.)
- put the audience's needs for information first

TOPICS:

- writing diagram
- topic selection and specification
- 4 steps of writing
- standard memo format
- complete sentences

METHODS:

- individual writing
- peer critique
- worksheets and review
- class discussion

MATERIALS:

- diagrams
- handouts and worksheets
- lists
- sample company memos
- student generated memos

MEMO WRITING CONTINUED

EVALUATION:

- students evaluate their own work
- in peer critique, students evaluate each other's work
- instructor evaluates completion of memo

TECHNIQUES FOR BETTER MEMO WRITING

OBJECTIVES:

At the end of this course, students will be able to do the following:

- recognize their audience
- , name their topic/main idea before writing
- organize their writing time using the 4 steps
- use the standard memo format
- write complete sentences
- brainstorm
- use correct punctuation
- get their point across using clear and specific words
- recognize and avoid bad writing: redundancies, repetition, wrong usage, wordiness
- write memos that have a clear and strong intended action/effect
- write memos that are reader friendly (using bullets, lists, numbers, etc.)
- put the audience's needs for information first

TOPICS:

- writing diagram
- topic selection and specification
- 4 steps of writing
- standard memo format
- complete sentences

METHODS:

- individual writing
- peer critique
- worksheets and review
- class discussion

MATERIALS:

- diagrams
- handouts and worksheets
- lists
- sample company memos
- student generated memos

EVALUATION:

- students evaluate their own work
- in peer critique, students evaluate each other's work
- instructor evaluates completion of memo

BUSINESS WRITING II

COURSE OUTLINE:

In order to communicate effectively, we need to be able to write clearly and persuasively. This course presents the fundamentals of effective business letter writing. We will focus on logical organization, word choice, style, tone and clarity, using students' own examples as well as practice exercises for reinforcement.

OBJECTIVES:

Upon completion of this course, students will be able to do the following:

- identify the reason for writing
- analyze the reader and what his response should be
- choose appropriate styles and tones
- organize ideas into the most effective order
- apply the principles of good business writing, including grammar, punctuation and mechanics
- edit first drafts
- write clear, precise letters and memos

TOPICAL OUTLINE:

- analyzing the author's purpose, the reader, the style and tone
- prewriting – brainstorming, organizing, freewriting
- writing clearly and correctly
- editing

OTHER:

- Hours: 12
- CEU: 1.2

WRITING CLEAR INSTRUCTIONS

COURSE OUTLINE:

Writing clear instructions is one of the most valuable skills any employee can bring to a company. Without clear, concise, accurate instructions, errors and reworks reduce productivity. This course will enable the employee to write instructions that are accurate, sequential and clear.

OBJECTIVES:

Upon completion of this course the student will be able to do the following:

- identify goal and purpose
- identify the best method for presenting the instructions
- use clear consistent sequence
- use concise language

TOPICS:

- goal and purpose
- active vs. passive voice
- modifiers
- clear instructions
- clear sequence
- verb use
- pronouns

METHOD:

- class discussion
- individual work on worksheets
- pair work
-

EVALUATION:

At the end of these sessions, students will be competent in these areas:

- determining the purpose and goal of instructions
- writing in clear sequence
- using concise language
- generating instructions for a work task

MATERIALS:

- worksheets
- student generated instructions

REPORT WRITING FOR TECHNICAL STAFF

COURSE OUTLINE:

This course has been designed to help new American engineers with all aspects of report writing. We will focus on the outline and structure of reports, brainstorming, organization and the most effective ways to present information. We also apply the principles of good writing, including grammar, punctuation and mechanics, already covered in the Business Writing class.

OBJECTIVES:

Upon completion of this course, students will be able to do the following:

- clearly identify the scope and purpose of the report
- analyze who will be reading the report
- brainstorm effectively
- write a clear preliminary purpose statement
- manage the time spent on writing more efficiently
- write a progress report
- present information effectively
- apply the principles of good business writing
- construct clear reports using the suggested outline

TOPICAL OUTLINE:

- analyzing scope and purpose, the reader(s), the style
- prewriting – brainstorming and organizing ideas
- managing time spent on writing
- writing purpose statements, progress reports and reports
- editing

MATH

MATH ON THE JOB

COURSE OUTLINE:

This course is a review of basic number concepts focused on helping participants understand the meaning of numbers and arithmetic operations. Strategies are provided for increasing accuracy when doing computations with whole numbers, decimals, fractions and percents. Rounding, estimating and averaging is covered. Applications to real work situations are used throughout with an emphasis on problem solving.

OBJECTIVES:

Upon completion of this course, students will be able to:

- read and write whole numbers and decimals using a place value chart
- perform operations involving whole numbers ,decimals and fractions
- round numbers and estimate
- solve proportions
- calculate per cents
- apply number concepts in problem solving situations
- read and interpret charts and graphs

TOPICAL OUTLINE:

- place value
- computations with whole numbers
- rounding, estimating and averaging
- computations with decimals
- tolerance
- radius and diameter
- understanding fractions
- reading a fractional scale
- ratio and proportion
- per cent concepts
- problem solving

OTHER:

- Hours: 24
- CEU 2.4

SOURCES:

Mitchell, Robert. **Math Skills that Work, Book One.** Chicago: Contemporary Books, 1991.

MATH FOR QUALITY CONTROL

Course Outline:

This course is a review of basic number concepts focused on helping participants understand and be able to accurately record filling level data. Strategies are provided for increasing accuracy when doing computations with decimals and percents. Rounding and averaging will be covered together with metrics and specific gravity. Participants will be trained in determining when fill levels are outside of required specification limits so that appropriate action can be taken to remedy the situation.

OBJECTIVES:

Upon completion of this course, students will be able to:

- perform basic operations involving decimals and percents
- round numbers
- perform mental arithmetic
- calculate averages
- accurately weight tubes and record the data
- compare data with minimum and maximum limits to determine if tube weights are within required specifications

TOPICAL OUTLINE:

- rounding
- estimating
- averaging
- computations with decimals
- per cent concepts
- metric system
- weights and measures
- specific gravity

OTHER:

- Hours: 12
- CEU 1.2

SOURCES:

Mitchell, Robert. **Math Skills that Work, Book One.** Chicago: Contemporary Books, 1991.

CHARTS AND GRAPHS IN THE WORKPLACE

OBJECTIVES:

At the end of this session, students will be able to do the following:

- read a simple table
- read a complex table
- make a table from gathered information
- read and make bar graphs, multiple bar graphs, line graphs, multiple line graphs, pie charts
- understand the differences between the different types of charts and graphs
- take data and make an appropriate graph/chart
- make projections from charts/graphs
- see trends and draw logical conclusions from charts/graphs
- calculate totals, averages, and percentages

TOPICS:

- tables
- bar graphs
- line graphs
- pie charts
- drawing conclusions
- seeing trends
- plotting information in different types of charts/graphs
- calculating totals, averages, and percentages

METHODS:

- Class discussion
- Individual work
- Pair work on some of the graphs/charts

MATERIALS:

- Worksheets
- Rulers
- Graph paper
- Cylinder with which to make a pie chart circle
- Calculators

BLUEPRINT READING

This course focuses on enabling participants to read and accurately interpret fabrication blueprints. Basic principles covered will include symbols and standard terminology used on blueprints, reading blueprint notes, understanding orthographic representations. The use of tools and devices for measuring will be emphasized throughout including the steel rule, vernier caliper and protractor. Exercises will focus primarily on the study of company drawings.

OBJECTIVES:

Upon completion of this course, students will be able to:

- perform numerical operations required to read blueprints
- read a fractional inch ruler
- read a dial caliper
- read a protractor
- calculate tolerance limits
- interpret orthographic representations
- understand blueprint symbols and standard terminology
- determine if a given manufactured piece is defective based on blueprint specifications

TOPICAL OUTLINE:

- operations with decimals and fractions
- types of lines used on a blueprint
- three-view drawings
- measuring with a scale
- reading the information on a blueprint
- tolerance
- use of a vernier caliper
- angular measurement
- interpreting company blueprints

Other:

- Hours: 24
- CEU: 2.4

SOURCES:

Olivo, Dr. Thomas. **Basic Blueprint Reading and Sketching.** Delmar Publishers Inc., 1993.

ENGLISH AS A SECOND LANGUAGE

ENGLISH AS SECOND LANGUAGE IN THE WORKPLACE

COURSE OUTLINE:

This course identifies English problems for non-native speakers and encourages students to practice speaking, writing, listening, and reading skills using company literature such as procedures, lists, policies, and safety information. This class will also provide practice in English pronunciation, sentence structure, verb tenses, American idioms, and enhance their work vocabulary.

OBJECTIVES:

Upon completion of this course, students will be able to:

- Ask grammatically correct questions in various tenses
- Give grammatically correct answers in various tenses
- Ask for and understand oral instructions
- Read and interpret written instructions
- Read and use the literature in the workplace
- Report important workplace events in a clear and concise manner (written and spoken)
- Communicate effectively with co-workers
- Use improved language skills to problem solve in the workplace
- Build a working English vocabulary for the workplace and beyond

TOPICAL OUTLINE:

- Simple present tense
- Present Progressive tense
- Simple past tense – regular and irregular verbs
- Expression "It takes me"
- Cardinal and Ordinal Numbers
- Codes, Abbreviations, and Symbols
- Nouns and Pronouns
- Prepositions
- Passive Voice vs. Active Voice
- Definite and Indefinite articles
- Commands for giving instructions
- MSDS sheets and safety vocabulary
- Role plays: introducing yourself and others; asking for information; reporting information and incidents; implementing safety rules and disciplinary procedures; asking for and giving instructions
- Work vocabulary
- Work literature: forms, labels, instructions; MSDS sheets; disciplinary and safety policies.
- Team building activities: brainstorming, building, consensus, and problem solving
- Critical language skills: dialogues; role plays; idioms; situations for various levels of speech (formal, informal)

EVALUATION:

- students will be evaluated for written and spoken language skills with interviews and analysis of pre and post-tests
- improvement in learning techniques will be evaluated based on performance in class and on worksheets
- students will perform self-evaluations based on correct completion of worksheets

EVALUATION APPLICABLE IN THE WORKPLACE:

At the end of this course, students will perform more effectively in the workplace:

- Students will be more competent at number use and discrimination. This competency will reduce the number of job errors that revolve around the use of forms, material code numbers, labels, and directions.
- Students will be more effective communicators in that they will be able to use correct verb tenses and time expressions, which will reduce the occurrence of misunderstanding or miscommunication.
- Students will be more adept at giving and receiving instructions, both written and oral. This will enhance their ability to perform jobs on the line and make fewer errors in completion of those tasks.

ADVANCED ESL FOR MANUFACTURING

ACCENT ON ENGLISH:

As the next level program, this ESL course identifies English problems for non-native speakers and encourages students to practice speaking, writing, listening, and reading skills using company literature such as illustrations, instructions, maps, and notices. Also, the classwork motivates students to improve pronunciation, sentence structure, verb tenses, American idioms, and work vocabulary and encourages students to organize work projects, identify problems, describe problems, solve problems, and implement solutions in order to create a harmonious environment where successful communication can occur.

OBJECTIVES:

Upon completion of this course, students will be able to:

- Ask grammatically correct questions
- Give grammatically correct answers
- Ask for and understand oral instructions
- Read and use the literature in the workplace
- Communicate effectively with co-workers
- Build a working English vocabulary for the workplace
- and beyond
- Analyze problems and implement solutions
- Organize work materials and take responsibility for physical improvements to the work area

TOPICAL OUTLINE:

- **Grammar Skills:**
  - ⇒ Simple past tense, present perfect, past perfect,
  - ⇒ Present real conditionals, past real conditionals, past unreal conditionals
  - ⇒ Causative and Permissive
  - ⇒ Negatives: no, not, none
  - ⇒ Use of some/any to avoid double negative
- **Role plays:**
  - ⇒ Asking for instructions
  - ⇒ Giving instructions
  - ⇒ Reporting incidents in the workplace
  - ⇒ Expressing conditional statements
- **Job Focus:**
  - ⇒ Work vocabulary
  - ⇒ Work literature: line instructions, product illustrations,
  - ⇒ Company maps, material lists, MSDS sheets
- **Analytical Skills:**
  - ⇒ Steps to problem solving
  - ⇒ Organizational skills
  - ⇒ Ability to discriminate among parts

ADVANCED ESL FOR MANUFACTURING

EVALUATION:

- students will be evaluated for written and spoken language skills with interviews and post-test
- students will perform self-evaluation based on correct completion of worksheets
- improvement in learning techniques will be evaluated with interviews and student response sheets
- students will be evaluated for their participation in teams and for their completion of analytical tasks

OTHER:

- **C.E.U.:** 1.6

COMMUNICATING EFFECTIVELY IN A BUSINESS SETTING

COURSE OUTLINE:

This course will help the non-native English speaker to communicate more effectively with clients, colleagues, superiors and subordinates. The class will be taught using handouts, worksheets, role plays, dialogues and discussion. We will pay attention to American grammar and idioms. This will be an introductory class that will lead to further courses, for example, business and report writing.

OBJECTIVES:

Upon completion of this course, students will be able to do the following:

- identify who they communicate with at work and on what level
- identify audience and purpose
- use appropriate style and tone
- introduce themselves, their company and their services to new clients
- classify different behaviors
- identify non-verbal clues
- recognize different cultures' non-verbal messages
- understand different conversational styles
- use active listening skills
- use Prep. and Point/Counterpoint formulas to organize thoughts in different situations
- answer questions efficiently in Q & A sessions
- use tenses correctly of both regular and irregular verbs
- improve other language and grammar problems identified by the teacher and individual students

INTERPERSONAL SKILLS

COMMUNICATION STRATEGIES AT WORK

COURSE DESCRIPTION:

The communication between co-workers and with customers can make the difference between efficient productivity and wasted effort and mistakes. This course will begin the process of building effective communication skills for use in the workplace as well as in personal relationships.

OBJECTIVES:

As a result of this course, participants will be able to:

- Understand the communication process
- Identify different personality types and strategies for dealing with others
- Refresh skills in active listening
- Reinforce assertiveness skills
- Build confidence through positive self talk
- Use professional behavior and respect to gain cooperation
- Resolve conflicts using the skills learned
- Interpret and use non-verbal messages

OTHER:

- 0.6 C.E.U.

COMMUNICATIONS – THE NEXT STEP
TEAM BUILDING, REACHING CONSENSUS AND CONFLICT RESOLUTION

COURSE OUTLINE:

This course will build on the skills taught in our prior Communications course. As explored previously, we will continue to use listening, developing understanding and clarifying what one another means to keep constructive communication on track. Specifically, the importance of team building, reaching consensus and conflict resolution as part of the communication process will be the focus of this course.

COURSE TOPICS:

- Review active listening and effective communication skills
- Assertively getting your point across
- Understand the difference between a work group and a team – (Which operates in your work setting?)
- How to support the problem solving efforts of the team
- Resolving conflict through communication and trust in the team
- Skills to reach consensus and/ or agreement

COURSE DETAILS:

- Four sessions
- .8 C.E.U.

MANAGING STRESS ON THE JOB

Too often changes at work or in our personal lives cause an overload of stress. Usually the effects of the stress spill over into most areas of what we do. This course will provide an opportunity to develop the skills needed to meet the stress and reduce the "overload".

COURSE OBJECTIVES:

- Recognize personal stress response pattern
- Learn relaxation techniques
- Communicate to reduce or minimize stress
- Learn to reduce stress through exercise, nutrition, etc.
- Identify personal stress triggers

COURSE TOPICS:

- Define stress
- Learn physical symptoms
- Use appropriate management techniques
- Adapt work situations to combat stress

COURSE DETAILS:

- 3 class sessions
- 0.6 CEU

PROBLEM SOLVING TECHNIQUES

OBJECTIVES:

- Describe and analyze problems encountered at work
- Write a problem statement
- Use an orderly, step by step process to solve problems
- Apply creativity to the problem solving process
- Use the brainstorming technique to help solve problems
- Become adept at using these techniques for all types of problems (work or personal)

TOPICAL OUTLINE:

- Defining a problem
- Guidelines for writing a problem statement
- Steps in problem solving
- Creative thinking
- People and problems
- Action plan for problem solving

COURSE DETAILS:

- 3 week course, 2 hours each session
- 0.6 C.E.U. (Continuing Education Unit)

APPENDIX D
SAMPLE ORIENTATION POSTER

P.R.I.D.E.*

*People Retraining
for
Industry Excellence

APPENDIX E
SAMPLE SCHEDULE

SAMPLE SCHEDULE
PRIDE
Mercer County Community College
May/June- 1994

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:00-10:00 am Shift C	ESL-SC		ESL- SC	Commun- 8:30-10:30 SC	
9:00-11:00 am	Rdg-HD Stress-MG Math-MCL	ESL-MCL Stress--HD Math-MG	Rdg-HD Stress-MCL ESL-MGI-	ESL-MCL Math-MGI	ESL-MG Math-MCL Writing-SD
11:00-1:00 pm	Writing-MCL	Writing-RC Writing-HD		Writing- RC	Writing RC
11:00-12:00 pm	Tutor-MG		Tutor-MG	Writing-12-2-HD	Tutor-MCL Tutor-MGI
11:30--1:30 pm		ESL-MCL		ESL-MCL	
1:00-3:00 pm	ESL-HD	Rdg-MCL Math-HD Rdg-RC	ESL-HD	Math-HD Rdg-MCL Rdg-RC	Writing-SD
2:00-4:00 pm Shift B	***Staff Mtg-3-4-MG***		Pr Solve-SC		Pr Solve-SC
3:00-5:00 pm		RDG/ESL-RC		Rdg/ESL-RC	
4:00-6:00pm	Learn to Learn-SC	Learn to Learn-SC	Math-SC	Learn to Learn-MCL	Math-SC

147

148

APPENDIX F
SURVEYS

PRIDE Employer Evaluation

Fall 1993 [November 1993] – Spring 1995 [August 1995]

Company Name: _____

Date: _____

Number of Employees Trained _____

As compared to 1993 before training began to present (1995), please choose the rating that most closely matches the employees' performance.

Place a ☑ in the appropriate box.

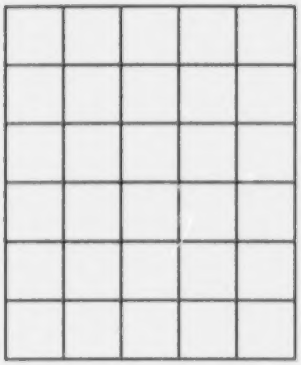
1	2	3	4	5
Most of the time				None of the time

Written Communication

1.	Recognize and read common words and meanings used at work.					
2.	Understand jobs related to work when technical meanings are required.					
3.	Determine meanings of expressions used on the job.					
4.	Recognize the meanings of common abbreviations and acronyms used at work.					
5.	Can interpret 3-dimensions or exploded view of an object for assembly.					
6.	Can follow sequenced illustration for assembly.					
7.	Can perform job from written or spoken directions given in English.					
8.	Can use written material to get job information.					
9.	Can use forms and written material to complete job.					
10.	Can do paperwork required for the job.					
11.	Can fill in forms.					
12.	Can infer information from written material.					
13.	Can identify parts, labels, and numbers from illustration or chart.					
14.	Can follow written directions.					

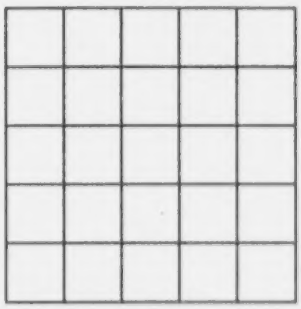
Safety

1. Makes suggestions about safety hazards.
2. Contributes ideas for safe environment.
3. Reads safety materials and follows instructions.
4. Uses appropriate tools and equipment for job.
5. Follows directions.
6. Reports errors or unsafe conditions.



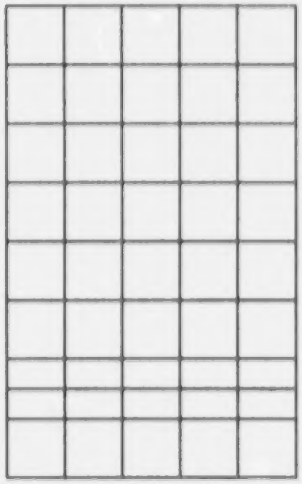
Communications

1. Can communicate with other workers in own department and in other departments.
2. Calls the company to report absence or lateness.
3. Listens to and follows instructions.
4. Makes limited number of mistakes as a result of not listening to instructions and/or not asking appropriate questions.
5. Company receives fewer customer service complaints.



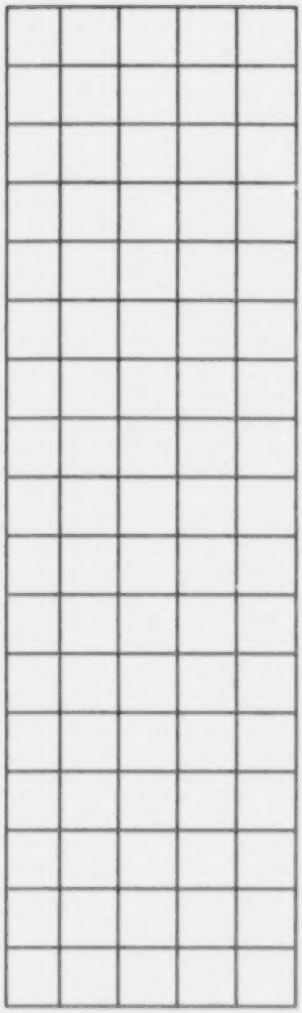
Quality of Work

1. There has been a reduced amount of time needed to give/receive instructions for assignments.
2. The number of mistakes or reworks is reduced.
3. Workers now read and understand work orders.
4. Workers use blueprints or graphic material accurately. (if applicable)
5. Workers use measurement tools accurately. (if applicable)
6. Employees compute math needed on the job.
7. Monitors machine errors and deals with them through the team.
8. Completes job related paperwork and tries to improve procedures.
9. Sets machines correctly and checks settings thoroughly.



Overall Improvement Since Training Began

1. Overall performance or knowledge of job has improved.
2. Language and math skills have improved.
3. Overall communication level has improved.
4. Overall level of job satisfaction has improved.
5. Overall self-esteem appears better.
6. Able to establish and follow through with priorities.
7. Overall knowledge of the work and company operations has improved.
8. Able to problem solve situations constructively.
9. General attitude seems better.
10. Able to use the technology required on the floor.
11. Show an interest in learning.
12. Number of absentees decreased.
13. Number of grievances submitted decreased.
14. Number of discipline records decreased.
15. Workplace safety record improved.
16. Increased number of suggestions made.
17. Reduction in the turnover rate.



Supervisor Evaluation Form
P.R.I.D.E.
1994-1995

On an ongoing monthly basis let's look at the training program to evaluate its progress. Do we see tangible changes? Is there any inpact? Are there still areas to cover? Once again we turn to you for your opinions and suggestions to make the training program more valuable to your groups, to the company, and to the employees.

1. How many employees from your area have participated in training? _____

a. How long was this training? (Number of courses or hours?) _____

b. What percentage of your group has had training to date? _____

Please rank your answers from 1 to 5, where **1 indicates "Very Unlikely" and 5 indicates "Most Likely". Circle your answer.**

	Very Unlikely				Most Likely
2. Do these employees ask for clarification more frequently?	*1*	*2*	*3*	*4*	*5*
3. Do you notice fewer mistakes or less rework?	*1*	*2*	*3*	*4*	*5*
4. Do employees now take more initiative to solve problems by themselves?	*1*	*2*	*3*	*4*	*5*
5. Are employees making attempts to handle stress on the job more effectively?	*1*	*2*	*3*	*4*	*5*
6. Do the employees seem more involved in what they are doing?	*1*	*2*	*3*	*4*	*5*
7. Are there better communications and understanding between work units and departments?	*1*	*2*	*3*	*4*	*5*

	Very Unlikely				Most Likely
8. Do employees seem more confident when communicating with you or co-workers?	1	2	3	4	5
9. Can you more clearly understand employees whose native language is not English?	1	2	3	4	5
10. Are employees better able to read and compute work orders and job-related material?	1	2	3	4	5
11. Has employee attendance/punctuality improved?	1	2	3	4	5
12. Are employees more effective filling out time cards?	1	2	3	4	5
13. Can employees report work situations more clearly?	1	2	3	4	5
14. Do you notice any changes in attitude towards the job since employees began training?	1	2	3	4	5
15. Have any of your employees bid up for a new job?	1	2	3	4	5
16. Have there been instances of improved safety?	1	2	3	4	5
17. Do employees volunteer for group activities more?	1	2	3	4	5
18. Has turnover decreased?	1	2	3	4	5
19. Has there been increased positive customer feedback?	1	2	3	4	5

	Very Unlikely				Most Likely
20. Has there been a reduction in time you spend giving/repeating instructions?	*1*	*2*	*3*	*4*	*5*

21. Our courses try to provide an opportunity for employees to practice work-related activities. Are there other areas you would like our training to cover that would help your area? (Ex. -communication)

_____
_____
_____
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_____
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_____

Name _____ Department _____

155

Areas for Evaluation
P.R.I.D.E.*
(People Retraining for Industry Excellence)

Business Outcomes	Educational Outcomes
• Employee empowerment	= communication skills
• Attendance	= increased confidence, morale
• Safety	= following directions
• Per unit production	= accuracy
• Lower error rates	= better communication and teamwork
• Reduced management time for instructions	= communication, directions
• # of product defect pre/post program	= details, directions, etc.
• Quality measurements	= reading, math, etc.
• Increased on-time shipment of orders	= details
• Positive customer feedback	= customer service, team building
• Improved morale	= attention from program, feeling
	= company investing in employee
• Reduced turnover	= more skills, can hire internally
• Reduced waste	= accuracy
• Promotions	= improved skills
• Improved safety in non-English speakers	= improved ability to communicate
• Bidding out on other jobs	= increased confidence and ability
• Client satisfaction	=accuracy
• Complaint reduction	=communication and accuracy
• Other company standards	= work with management

APPENDIX G
INDIVIDUAL EDUCATION PLAN
IEP

P.R.I.D.E.

People Retraining for Industry Excellence

Name: _____

Date: _____

Current job: _____

How long in this job? _____

Previous job: _____

What job training have you had? _____

Education: Completed high school? _____

Highest grade level? _____

Would you like to get your G.E.D.? _____

What do you like to do to get your G.E.D. _____

What do you need to learn about/improve for your job or home life? _____

_____

What are your interests? _____

_____

Course material information

READING

What kind of reading do you do on your job: Check those that apply.

_____ forms
_____ charts
_____ manuals
_____ memos
_____ documents

The reading that I am required to do for my job is difficult. YES NO

I need to improve my reading skills. _____

ENGLISH AS A SECOND LANGUAGE (ESL)

Is English a 2nd language for you?_____
What is your primary language? _____
Have you ever completed an ESL course? _____
Did it help you? _____
Do you like more ESL classes? _____
What do you think that you need to improve?_____

WRITING

What kind of writing do you do on your job: Check those that apply.

_____ forms
_____ charts
_____ memos
_____ reports

Do you need to improve your writing skills? _____
In what areas do you think you need to improve? _____
_____

MATH

What kind of math do you use on your job? Check those that apply.

_____ measurement
_____ estimation
_____ calculation
_____ graphing/plotting

Do you need to improve your math skills? _____
In what areas do you think you need to improve?_____

PEOPLE SKILLS (INTERPERSONAL)

Here are some additional areas which will be addressed in the P.R.I.D.E. training. Check those that will be helpful to you.

_____ Communicating effectively with co-workers, supervisors or customers
_____ Managing stress
_____ Managing time
_____ Problem solving techniques

With the skills and knowledge you have now, are you able to perform your job satisfactorily?_____

What do you find most difficult about your job?_____

How do you usually go about learning more about something you are interested in or need to know something about? Check the one most true for you.

_____ Read about it
_____ Listen to it
_____ Have someone show you more about it

Please review the course choices (see attached) and indicate below which are needed/ interested in:

_____
_____
_____

Courses for P.R.I.D.E.

March 1994 - April 1995

ESL 1: This course identifies English problems for non-native English speakers and encourages students to practice their listening, speaking, reading, and writing skills using company literature such as procedures, lists, labels, signs, and safety information. The instructor will work with students to improve pronunciation and expression as well as correct use of verb tenses, grammar, and American idioms.

ESL 2: This course is a continuation of ESL 1 and continues to use company materials such as maps, charts, instructions, and forms. Students are encouraged to create and respond to workplace scenarios as well as communicate their ideas in clear and standard English. Students work to enhance their vocabulary, improve their grammatical skills and expressions.

ESL 3: This course is a continuation of ESL 2 and focuses on American expressions and idioms as well as company literature. Case studies and scenarios are created and resolved. Students continue to work on vocabulary and self-expression (written and spoken).

ESL Dialogue: This course focuses on the dynamics of conversation and the different ways to speak to people within the company. Situations and role plays from the workplace will be used to allow students to practice idioms, new vocabulary, and grammatical structures, and encourage students to use language to problem solve.

Reading Lab: This is a small ongoing class for people who need to learn the basics of reading and writing. The reading instructor will ask individuals to join this group. However, if you know that you need this class, please sign up. The instructor will work individually with students until she feels it is time for everyone to be together as a class. Students will spend part of the class time working at their own pace with the instructor, and then all will work together on shared problems.

Reading and Writing Forms and Instructions I: This course will help students interpret and use signs, notices, forms, and instructions. Students will learn strategies to interpret symbols and abbreviations, apply strategies for dealing with unfamiliar vocabulary, and use a reading plan. Students will be able to understand the purpose and subject of forms, complete forms, follow and give written instructions. Also, students will learn good writing strategies. Case studies and workplace scenarios are implemented.

Reading and Writing Forms and Instructions II: This course is a continuation of part I. This time, the material used is more complicated and interrelated. Students continue to improve vocabulary skills, and will expand their reading skills by working on maps, diagrams, and flowcharts. Students will work more on giving and receiving more complex directions. They will write summaries, paragraphs, and instructions; they will also research information to solve a case study.

Reading and Writing Notes and Memos: Employees need to understand and respond to the notes and memos they receive from the company. This course will give students strategies for understanding and interpreting this information, as well as provide strategies to improve basic listening skills (for meetings) and note-taking. Students will be able to identify subjects, main ideas, and supporting details of the reading material and will generate concise and grammatically correct memos and notes.

Reading Company Materials: This course helps employees understand company literature regarding benefits, health and safety, employee rights, and company policies. Students will use a reading plan to skim, scan, and read in detail parts that are important for their use. Students will research information and summarize that information for others. As a small group project, students may rewrite parts of the company manual or safety policies so that the material is easier to understand.

Grammar Brush Up: This course offers students the opportunity to brush up on all those grammar rules that they have forgotten or always needed to know. It takes the form of 4 mini sections, each of which is complete in itself. Topics covered are parts of speech, punctuation, spelling, and vocabulary and sentence problems.

Memo and Letter Writing: This course provides strategies for delivering brief, clear and complete written messages. Students will learn how to present their ideas clearly and usefully to their readers. These sessions will show students how to apply the principles of good business writing to any writing they may have to do at work and at home.

Business Writing: In order to communicate effectively in the modern office, employees need to be able to write clearly and persuasively. This course presents the fundamentals of effective business letter writing. It focuses on logical organization, word choice, style, tone and clarity, using students' own examples as well as practice exercises for reinforcement.

Technical Writing: For those who work in more technical positions, this type of writing is necessary in order to record and convey information such as procedures, techniques, and mechanical instruction. The instructor will also cover elements of proofreading and editing (abbreviations and markings). Students will work on current projects and provide feedback to each other regarding the usability and readability of their work.

Number Discrimination: Students will practice reading, writing, listening to, and recalling number sequences in order to avoid number errors. Company material will be used to generate scenarios. Students will work in pairs and individually to practice these skills.

Tables, Charts, and Graphs: This class is to familiarize students with tables, pie charts, bar graphs, and line graphs. Students will compare the uses and effectiveness of these and spend time interpreting them. Students will generate their own charts and graphs using company information.

Pre-Blueprint Math I, II, and III: This hands-on class will give students practice in calculating with whole numbers, fractions and decimals. These skills will be applied to work situations and will include practice reading gauges, scales, and charts.

Math on the Job I, II, and III: This class will help students increase their understanding of numbers on the job. There will be instruction in mental arithmetic, rounding, estimating, averaging, and problem solving. Basic concepts of working with decimals will be covered. Reading charts, graphs, and scales will be explained together with techniques for weighing and measuring. Participants will also gain an understanding of employee benefits.

Problem Solving Techniques: This course will help students to learn the strategies needed for describing and analyzing problems. Using a step by step process, students will be guided through brainstorming possible solutions, using creative thinking, and taking action on an appropriate solution. By the end of the course, students will have had hands-on practice in using these strategies for all types of problems (work or personal).

Time Management: Students will begin this course by understanding the importance of preparing mentally and physically for a productive day. Then, several time management techniques will be discussed, practiced, and applied. By the end of this course, students will apply the strategies learned to suit their individual time-use needs.

Stress Management: With all the stress we experience both on the job and at home, this course offers some techniques to reduce and manage it. Within the class sessions, strategies for relaxation, communicating beyond conflict, stress, proper nutrition and the benefits of exercise will be taught, practiced and applied.

Presentation Skills: We need to be able to put forward our ideas clearly and persuasively. This course takes students through the process of presenting ideas, from preparing themselves and their materials to standing up and speaking in front of a group of people. Some of the topics students will learn about and apply are these: traits of good/bad speakers, organizing information, draft and summaries, practicing the presentation and strategies for giving and receiving constructive feedback.

Presentation Skills for Business: This course is similar to the regular presentation skills course, but focuses on techniques used specifically in sales meetings, at trade shows, and in impromptu situations. Students will organize materials to fit the time requirements for 5, 15, and 30 minute presentations, and work on using visual aids and audience Q/A sessions.

Documentation: This course is designed to help employees keep track of their daily work, such as in logs or in an instruction format. Good writing skills are stressed, as are proper formats and reader usability.

Communicating Effectively: Problems at work occur when there are blockages to communication. This course will encourage students to look at how we communicate both on a personal level and on the job, and will give students strategies to communicate more effectively. Specifically, students will learn about their own styles of communicating, observing and using body language, learning and practicing active listening skills, and applying strategies to resolve conflict and problems.

Team Building: In any work environment, it is the employees working well together that makes the business productive, strong, and so keeps them employed. This course will focus on understanding and accepting personality differences, communicating clearly and effectively, and recognizing and understanding the roles people take in a group.

How You and the Company Work: This course will show how employees relate to the whole company as well as how the company itself works. Students will use company materials such as flowcharts, tables, and graphs and solve case studies that stress the importance of employee skills, responsibility, and awareness.

Telecommunications: Designed for employees who deal with clients on the phone, this course will help students improve their voice skills, professional phone manners, and techniques for giving and getting messages. Students will learn how to deal with difficult callers and difficult telephone situations, and how to satisfy client needs.

APPENDIX H
LETTERS OF INTENT

GRUMBACHER
Fine Quality Artists' Materials

M. GRUMBACHER, INC.
30 Englehard Drive
Cranbury, N.J. 08512

TELEPHONE (609) 655-8282
TELEX 139195
FAX (609) 655-9114

September 25, 1995

Ms. Elizabeth Miller
U.S. Department of Education
Washington, D.C.

Dear Ms. Miller:

On behalf of M. Grumbacher, I would like to express my sincere gratitude for your assistance in working with Mercer County Community College, and indirectly with each of the partners, in implementing the Workplace Literacy Grant.

I believe the grant has had a positive impact in motivating employees to increase their employment opportunities through basic skills enhancement and hope this motivation inspires employees to take the initiative to continue their education at Mercer County Community College or elsewhere. Though the grant-funded training has officially concluded, M. Grumbacher will continue to actively encourage all our employees to continue to pursue their educational goals through our tuition assistance program.

Again, I would like to thank your department and Mercer County Community College for providing the resources we so desperately needed.

Sincerely,

Dennis Richardson

Dennis Richardson
Personnel Manager

DR/vks

HANN & DEPALMER
DIVISION OF C&I PROMOTIONS, INC.

September 19, 1995

Ms Elizabeth Miller, Grants Officer
U.S. Department of Education
400 Maryland Avenue Southwest
Building: Switzer 4512
Washington, DC 20202-7327

Dear Ms Miller,

On behalf of the employees of Hann & DePalmer, we want to thank the Department of Education and Mercer County Community College for the opportunity to participate in the Federal Workplace Literacy Grant.

Our 18 month partnership with Mercer College went by so quickly! The teachers actually became a part of our H & D family. The results of their teaching and personal skills have impacted positively on all of us.

The management of our company has always believed in training and education on the job. The Grant made us especially aware of the need for more self-improvement skills. Our budget and goals for 1996 includes a much greater emphasis on education on all levels.

Thanks to the Grant and Mercer College our employees are doing a better job for us, but much more importantly, they are much better prepared for their future.

Sincerely,

Beth M. Hann
Human Resource Director

cc: Elaine Weinberg
Mercer County Community College

28 ENGELHARD DRIVE, CRANBURY, NJ 08512 • (908) 521-4646 • (609) 655-4646 • FAX (609) 655-0782

McLean Engineering
A ZERO
Corporation
Company

70 Washington Road
Post Office Box 127
Princeton Junction
New Jersey 08550

Telephone
609 799 0100
Facsimile
609 799 1081

September 26, 1995

Ms Elizabeth Miller
US Department of Education
400 Maryland Avenue South West
Washington, DC 20202-7327

Dear Ms Miller:

McLean Engineering participated in the Workplace Literacy Program as a partner with the Mercer County Community College from February 1994 until August 1995.

The grant allowed us to offer training in reading, writing, and grammar. We were very pleased with the results of the program. This was a win - win program for all who participated. We had excellent participation with 90% of the employees attending at least one class.

I'd be remiss if I didn't give credit to the outstanding Mercer County Community College teachers. They were truly committed to their students.

Because of the significant impact the program had at McLean Engineering, we plan to continue training and employee enrichment.

Thank you for the opportunity you gave our employees.

Sincerely

Pat Gargus

Pat Gargus
Human Resource Manager

RheinChemie RC

A Bayer Company

Rhein Chemie Corporation
1008 Whitehead Road Ext.
Trenton, NJ 08638
Phone: 609 771-9100
Fax: 609 771-9539

TÜV CERT ISO 9001 CERTIFIED

September 28, 1995

Elizabeth Miller, Grants Officer
U.S. Department of Education
400 Maryland Avenue South West
Building: Switzer 4512
Washington, DC 20202-7327

Dear Ms. Miller:

The Rhein Chemie Corporation participated in the Workplace Literacy Program as a partner with the Mercer County Community College.

Throughout the 18 months of the grant, more employees were placed in the classroom setting than we ever thought possible.

Our employees improved their skills in many areas, which is showing in their performance in the workplace.

Even though the grant is officially completed, our plans for training and development will continue.

We had an excellent partnership with Mercer County Community College. Their commitment to education was demonstrated in the outstanding quality of education provided to our employees.

On behalf of Rhein Chemie Corporation, we thank you very much.

Sincerely,

Dorothy Zrinko

Dorothy Zrinko
Human Resources Representative

dz

SETCO
Manufacturers of stock and custom plastic bottles
Setco Inc. 34 Engelhard Drive, Cranbury, New Jersey 08512 Telephone (609) 655-4600

September 20, 1995

Elizabeth Miller, Grants Officer
U.S. Department of Education
400 Maryland Avenue South West
Building: Switzer 4512
Washington, DC 20202-7327

Dear Ms. Miller:

We at Setco would like to express our thanks to the Federal Government for awarding Mercer County Community College the Federal Work Place Literacy Grant that we have been involved in for the past 18 months.

Our sincerest appreciation also goes to the College for approaching us with the opportunity to be involved in such a wonderful program. The benefits of the grant can still be seen and will continue to be seen for quite awhile.

Many employees now have the desire to continue with their training, thanks to the positive outcome of the grant. "Kudos" to the instructors for bringing many employees out of their shells.

We had an excellent relationship with Mercer Community College. Their professionalism and commitment to education was demonstrated in the outstanding quality of education provided to our employees. To that degree, we are currently in the process of applying for an additional grant through the state of New Jersey with Mercer Community College to be our educators.

Very truly yours,

Donna Cirullo
Human Relations Manager

/bas

SADAT
ASSOCIATES
INC.

ENGINEERING & ENVIRONMENTAL SCIENCE
116 Village Boulevard
CN 5331
Princeton, NJ 08543-5331
609-987-2500
Fax: 609-243-0120

September 20, 1995

Elizabeth Miller, Grants Officer
U.S. Department of Education
400 Maryland Avenue South West
Building Switzer 4512
Washington, DC 20202-7327

Dear Ms. Miller:

On behalf of Sadat Associates, Inc., I would like to express our thanks to the federal government for awarding us a federal work place literacy grant through the Mercer County Community College.

The company was very pleased with the results and the employees who attended the courses very much improved their presentation and report writing skills. They all wish the grant could be extended as they have the desire to continue with their training.

The company wishes to thank Mercer County Community College, as an excellent job has been done by their staff who demonstrated outstanding quality of education and dedication.

Sincerely,

SADAT ASSOCIATES, INC.

By: Ahmed Hamidi for
Ahmed Hamidi, Ph.D., P.E., P.H.
Vice President, Engineering

AH/ct

SADA045F.WP5
September 11, 1995

DACUM CHARTS
SERVICE AND MANUFACTURING ORGANIZATIONS

MERCER COUNTY COMMUNITY COLLEGE

National Workplace Literacy Program
Grant Period: November 1, 1993 - August 31, 1995
Project Number VA198A30142-93
Funded by the US Department of Education

P. R. I. D. E.

DACUM
HANN & DEPALMER
WAREHOUSE

DACUM PANEL MEMBERS

Dave Anderson - Inventory Control
Russ Brewer - Pick/Pack, Support
Denise Conover - Pick/Pack
Mike Cowell - Production/Assembly, Lead Person
Ivette Davila - Copier/Mailroom, Mailroom Clerk
Gitta Desai - Production
Mark Doan - Pick/Pack, Lead Person
James Ikola - Shipping, Assistant Shipper
Ray Koza - Receiving, Receiver
Madhu Patel - Receiving
Nick Tessler - Operations Manager

DACUM FACILITATOR

Raymond Procaccini
Curriculum Developer, MCCC

RECORDERS

Jean Meier
Senior Education Specialist, MCCC
Ave Pollak
Senior Education Specialist, MCCC
Elaine Weinberg
Director, Workplace Skills Project, MCCC

DATE

December 14, 15 and 17, 1993

LOCATION

Mercer County Community College

BEST COPY AVAILABLE

The **WAREHOUSE TEAM** assures quality by storing, picking, packing, shipping and assembling promotional advertisement fulfillment merchandise and customer related services for various prestigious clients throughout the world.

I. Receiving

TASKS

A. Unloading

1. Read bill of lading	2. Arrange traffic control	3. Verify materials	4. Identify premiums	5. Decide equipment needed	6. Remove materials	7. Perform carton count	8. Sign bill of lading
• Verify shipment • Read information • Compare/contrast bill of lading to number of skids	• Communicate to driver • Decision making - quantity count (addition), boxes (number of skids), multiplying cartons • Call/interact with supervisor driver and other departments (communication skills)	• Read documents for procedures/directions • Communication • Math - multiplication, addition and pairing • Sort piles • Match codes against items	• Decision making • Communication	• Decision making • Knowledge of equipment - cause/effect	• Follow procedures	• Count - length, width, +, x, % • Follow procedures - maintain standards • Decision making - times entered • Read • Write complete information about missing or broken contents • Spelling/grammar	• Follow procedure • Proofreading

B. Documentation

1. Log in information	2. Create database file	3. Log in information on receiver report	4. Separate non-inventory receipts	5. Deliver to appropriate department	6. Pull sample	7. Obtain authorization	8. Update database file
• Write clearly • Spelling • Accuracy • Creating document	• Number discrimination • Follow directions	• Typing • Complete forms	• Categorize • Discrimination	• Follow system	• Interpret directions • Follow directions	• Communication within organization	• Select new items • Compare/contrast with records

C. Physical Count

1. Separate material	2. Adjust scale	3. Empty first carton	4. Enter tare weight	5. Choose sample amount	6. Count sample twice	7. Set scale	8. Perform 10 carton ave.
• Sort	• Decimal measurement	• Follow procedures	• Read and record weights	• Follow directions	• Count	• Measurement • Decimal	• Calculate average

9. Compute total amount of merchandise	10. Compute total weight of shipment	11. Expand database file with new information	12. Generate label	13. Place paperwork in bin	14. Move material to staging area
• Adding • Multiplying	• Calculate weights	• Compare/contrast new data • Typing	• Spelling	• Alphabetize	• Follow procedures

D. Key Entering

1. Remove receiving report from bin	2. Update database	3. Check paperwork	4. Enter material records	5. Obtain load sheet	6. Verify location of materials	7. Enter location records in PC	8. Enter time and cost of materials on history record
• Read PC screen • Verify records • Proof reading	• Enter time/cost - time in hours/minutes (.15=1/4 hr.) • Cost of materials - +, -, x, /, % • Record signs and symbols	• Proofreading	• Record PC printouts • Typing	• Key entry • Read bin name • Compare load sheet to screen	• Compare/contrast	• Read PC screen • Verify records • Proof reading	• Time in hours/minutes (.15= 1/4 hr.) • Cost of materials - +, -, x, /, % • Record signs and symbols

9. Return to log screen to update records	10. File Receiving Report	11. Receive approval from customer service	12. Set up report for print run	13. Get printout of receiving reports from MIS	14. Organize reports for distribution	15. Distribute reports to customer service
• Follow procedures	• Alphabetize	• Communication	• Decision making • Communicate with departments	• Follow directions	• Make copies • Time management • Prioritize work • Collate • Match reports to paper work • Compare/contrast against reports	• Follow procedures

TASKS

E. Return Merchandise

1. Read bill of lading	2. Verify materials	3. Remove unprocessed materials to receiving staging area	4. Perform carton count	5. Log in information	6. Create database file	7. Pull sample	8. Obtain authorization
• Read for information	• Compare to actual product quantity, code	• Words and numbers • Decide where to move	• Count • Average	• Typing	• Follow procedures	• Follow directions	• Follow procedures • Teamwork - CSR and receiving department

9. Update database file	10. Separate material	11. Adjust scale	12. Choose sample amount	13. Perform physical count process duties	14. Complete paperwork
• Look up location for identical stock • Avoid repeating location • Read PC screen for location and warehouse • Write - post it notes • Communication - sales (why returned) and customer	• Sort • Compare/contrast	• Decimals/measurement	• Decision making • Follow procedures	• Counte	• Read • Write

II. Production

A. Job Jacket

1. Receive job jacket from customer service	2. Log job in book or on computer	3. Prioritize list for shipping	4. Detach job ticket from job jacket	5. Prioritize job ticket on job board	6. Update job board as necessary	7. Review job jacket	8. Pull pick list
• Follow procedures	• Read job number and clients • Write brief description	• Read deadlines, quantities, shipping methods • Written communication for shipping • Decision making	• Read due dates	• Read deadlines, quantities • Decision making - what to do first, whom to use	• Read what jobs are in progress • Decision making	• Read what materials needed for job; is all documents in jacket; are instruction complete • Decision making - send back for additional instructions • Communication with CSR if due date is reasonable	• Read/check all materials are listed • Decision making – who will pick • Communication with hi/lo and cage people

9. Distribute list to appropriate person with job number	10. Make copies when necessary	11. Verify shipping label for appropriate carrier	12. Write zip code list
• Communication - verbal to departments	• Clerical	• Read charts for zip codes • Analyze potential problem • Communicate with verbal instructions	• Write proper script of numbers • Math - match number of entries versus number of labels

B. Picking

1. Read pick list	2. Organize selection by location	3. Contact cage person for premium items	4. Write special instructions on pick list	5. Determine picking strategies	6. Separate premium and hi/lo locations	7. Write notes to hi/lo operator for picking	8. Pick items
• Read/scan for location route • Communicate with hi/lo operators • Decision making – what route to take	• Read/scan for location route • Communicate with hi/lo operators • Decision making – what route to take	• Verbal–phone/face to face	• Write quick and abbreviated information • Read changes in quantities • Math - calculate differences in quantities	• Prioritize organization	• Sort	• Writing • Spelling	• Follow instructions

9. Verify correct items in box	10. Use computer to find location	11. Use scale to determine quantity	12. Perform hand count	13. Check for stock discrepancies	14. Consolidate stock	15. Complete unload sheet, if required	16. Return items to production staging area
• Compare with order	• Read screens	• Weight for count • Scale reading	• Count	• Compare/contrast	• Match	• Write	• Verify accuracy of location

TASKS

C. Set Up

1. Determine cost and labor of job	2. Estimate time for assembly	3. Decide on table set up	4. Construct work area	5. Layout job	6. Complete pre-work as per work order	7. Communicate instructions from lead person to assemblers	8. Verify count of all items
• Math - +, -, x, / • Write quotes • Communicate relaying information to CSR • Read specs instruction • Decision making	• Math - how many people/ hours to complete job by quantity; +, x, / • Decision making - who will be doing job • Communication - where to pull resources	• Decision making - where, how, and what jobs go where; space • Math - how many skids and equipment needed	• Communicate what is needed; give instruction; resources available (tables, equipment and number of set up) • Math - how many set up per table	• Read instruction for setting sequences for collation, pre-work • Communicate what goes where on floor or tables	• Read what needs to be done • Math - how many sets of what quantities	• Verbal written communication - sequences of events leading to finished production and how many pieces per hour	• Math - +, -, x, / • Communication - shorts/ overs needed to be reported

9. Match job items to pick list	10. Call customer service to report errors	11. Take QC sample to authorized personnel	12. Get approval from customer service	13. Select personnel	14. Make sample	15. Complete shipping label	16. Give first sample to shipping
• Read codes descriptions	• Communication - verbally for problems or discrepancies	• Verbal communication of changes or corrections	• Communication - verbal/ written OK's	• Decision making	• Read instructions	• Read check domestic/ international destinations	• Communication

17. Set QC procedures for job running	18. Explain procedure to lines	19. Begin time capture	20. Run job
• Follow procedures	• Verbal	• Math	• Follow procedures

D. Piece Work/ Subcontractors

1. Get information from production supervisor	2. Determine turn arcund time	3. Determine per unit cost	4. Collect list of workers	5. Provide instructions and samples	6. Break down materials per worker	7. Perform QC of materials	8. Distribute materials to workers
• Communication	• Calculate average	• Multiplication	• Itemize	• Communicate • Demonstrate	• Organize • Sort	• Read and follow directions	• Follow procedures

9. Verify completed material returned	10. Process piece work vouchers	11. Place vouchers in job jackets
• Compare contrast	• Follow instructions	• Sort

E. Assembly

1. Perform pre-work activity	2. Read label to match letter	3. Collate material	4. Identify premium orders with special stickers	5. QC order according to schedule	6. Label jobs with bar codes for specific carriers	7. Record time discrepancies on form	8. Replace extra material to location
• Open envelopes • Label envelopes • Pre-work • Math - determine number of people needed	• Reading	• Communication (ESL) - what goes where • Math - +, x, counts on finished product	• Match • Read • Visual discrimination	• Read proper items	• Math - compare counts • Communicate which labels to use	• Math - how much time needed • Write problems encountered	• Follow procedures • Sort

F. Shipping

1. Communicate job needs with shipping	2. Communicate first class job needs with mail meter person	3. List information about rush shipping on job board	4. QC order for completeness	5. Complete packing skids as required	6. Complete proper paperwork for shipping	7. Bring completed order to shipping	8. Sign off by assembly to shipping
• Verbal communication - when job will be completed • Math - number of pieces for each carrier and total pieces	• Verbal communication - when job will be completed • Math - postage needed; number of pieces; resources	• Written communication for schedule	• Calculate number of pieces	• Communicate what is on skids • Math - how many pieces per skids; +, x	• Write and read transcribe quantities and numbers	• Communicate verbally to identify what job and number of skids	• Write • Math - verify counts • Communicate

9. Clean up area	10. Complete time capture
• Communication - give instruction	• Write • Math - record job numbers; figure time hours and minutes

TASKS

G. Close job jacket

1. Get all paperwork from shipping	2. Match paperwork with shipping ticket	3. Total all information	4. Record all material used	5. Finalize job jacket	6. Log job jacket information into book	7. Return jacket to accounting	8. Update status code in PC
• Read • Math - job number and piece total	• Read - clerical	• Math - +, -, x, / • Determine costs/shipping methods	• Math - +, -, x, / • Writing - list sizes and types	• Read - review all information	• Write and read - enter information in log book	• Follow procedures	• Read • Data entry

III. Shipping

A. Set Up

1. Turn on computers	2. Verify correct information in PC	3. Determine if departments have appropriate materials for shipment	4. Deliver skids where needed	5. Solicit special services from departments, if required	6. Complete paperwork as needed
• Follow directions	• Read computer screen • Spelling • Decision making • Accuracy	• Decision making • Verbal communication	• Decision making • Verbal communication	• Decision making • Verbal/Written communication • Negotiation	• Read computer printouts • Write • Math - +, -, x, /, formula • Outside communication - documentation

B. Scheduling

1. Read priority lists	2. Prioritize shipping needs	3. Read label for vendor	4. Select vendor for shipping	5. Quote prices to customer service	6. Get approval from customer service	7. Calculate time requirements for shipper	8. Arrange shipment with vendor
• Read • Prioritize	• Time management	• Read	• Decision making • Verbal Communication • Estimation - +, -, x, /	• Verbal communication - negotiations • Compare/analyze, solve • Math - formula • Decision making	• Verbal communication - phone skills	• Math - estimate • Compare • Negotiation	• Estimation • Communication

9. Arrange delivery time with departments	10. Receive merchandise from departments	11. Verify counts and weights	12. Fill out bill of lading	13. Place materials in staging area
• Communication • Negotiation	• Prioritize • Read shipping slip • Math - add counts • Verification - counting	• Verbal communication • Read and write • Math • Follow directions	• Read and write • Follow directions and manual • Math - Calculate weights • Verify correct information	• Decision making - type of equipment • Prioritize

C. Processing

1. Receive sample materials from department	2. Weigh sample	3. Input information into PC supplied by vendor	4. Calculate final cost and weight	5. Write information on documents from each department	6. Return paperwork to appropriate departments
• Prioritize • Verbal communication	• Decision making - level balance • Math	• Read PC • Decision making - correct information	• Verify information • Math - calculation • QC check document	• Read and write • Clerical • Communicate	• Communicate • Read

D. Problem Solving

1. Receive notice of shipping problem	2. Contact appropriate customer service	3. Locate shipment	4. Determine problem	5. Review problem with customer service representative	6. Determine cause of problem	7. Strategize solutions	8. Take corrective actions
• Verbal communication • Read and write • Documentate - Tracer Form	• Verbal/written communication • Read	• Communicate • Read and write	• Decision making • Analyze all aspects • Come to conclusion	• Verbal/written communication • Analyze - involve all parties that might be able to help	• Decision making	• Verbal communication • Read and write • Brainstorm	• Communication - whether re-shipment is necessary • Verify who was at fault

9. Report explanation back to customer service representative	10. Determine credit for mis-shipment	11. Request hard copy of explanation from shippers, if required	12. Document information	13. File information
• Communicate	• Communicate • Compare/estimate • Analyze	• Verbal communication	• Read and write	• Read • Organization

TASKS

E. Billing

1. Accumulate appropriate paperwork	2. Determine method of shipment	3. Determine types of service offered	4. Determine costs from formula for each company	5. Create billing report	6. Make copies of billing	7. Distribute copies to appropriate department
• Read • Organize • Communicate	• Decision making - what methods to use • Read	• Read and write • Decision making	• Read and write • Math - use formula	• Read • Write	• Read • Math	• Decision making • Follow procedures

IV. Pick/Pack

A. Set Up

1. Acquire requisitions and pick list from MIS	2. Separate pick list by client and type	3. Count number of requisitions from control logs	4. Record number of requisitions on pick list	5. Separate requisitions by order numbers	6. Highlight special shipping methods	7. Batch pick lists and requisitions by client and type	8. Complete necessary paperwork
• Communication - with MIS person who prints order	• Accuracy - not mix order types • Read - to distinguish between clients or same clients being batched differently • Organization - what will need prioritizing	• Count • Accuracy • Read	• Read - for matching types clients • Write • Accuracy - to record correct number of requisitions	• Read - for multi-page requisitions and comparison • Accuracy - for quality control • Organization - to keep same order types together	• Communicate - to explain written information for special shipping methods to picker/packer and shipping • Prioritize - for special rush jobs	• Organize - to properly match pick lists with requisition for each client and type • Read - to properly batch	• Count • Write • Communicate - with management

9. Prioritize requisitions on picking table by shipping methods and/or time frames to complete	10. Provide shipping with control log	11. Return confirmations and direct mail requisitions to data and customer service	12. Prepare management reports	13. Give out daily assignments
• Organization • Numbers • Common sense • Time management	• Communication	• Communication • Organization	• Communication	• Communication • Organization • Prioritize • Time management

B. Pick

1. Gather tools	2. Log in requisitions	3. Log out requisitions on pickers log	4. Acquire master job number for requisitions for job labor	5. Determine picking strategy	6. Separate premiums and hi/lo locations	7. Write notes to hi/lo operator for picking	8. Pick items
• Organization • Communication	• Follow procedures	• Read and Write - to fill out picker's log	• Read and Write	• Read, organize, plan	• Organization • Read	• Write - hi/lo and premiums for picking • Communication • Numbers	• Read, count numbers • Common sense • Write

9. Check for stock discrepancies	10. Verify correct items in box	11. Complete unload sheet, if required	12. Use computer to find location	13. Use scales to determine quantity	14. Return items to pick/pack table	15. Report stock discrepancies and problems	16. Verify address and shipping method
• Read	• Read • Communication • Accuracy • Literacy	• Write, communication	• Memory • Read	• Accuracy • Count • Memory • Read	• Sense of direction	• Communication	• Read

17. Separate merchandise by requisitions	18. Initial completed requisitions	19. Leave order in staging area	20. Return overs back to stock	21. Log out	22. Complete time capture
• Read • Count	• Write	• Organization • Communication	• Sense of direction	• Write • Numbers	• Determine work lines • Calculate times • Estimate

TASKS

C. Pack

1. Verify address and shipping method from order	2. Determine if QC required	3. Request QC of special clients' orders	4. Move materials to packing station	5. Perform QC of materials	6. Notify picker of overs or unders	7. Determine shipping materials according to cost	8. Pack according to clients' specifications
• Read	• Read • Common knowledge	• Communication	• Follow procedures	• Accuracy, counting	• Communication	• Common sense, reading • Cost analysis	• Read • Organization

9. Pack and seal package	10. Apply shipping label and bar codes on packing list envelope	11. Move packages to appropriate locations	12. Give Shipping appropriate paperwork	13. Estimate amount of time per client for job labor card	14. Complete time capture
• Follow procedures	• Read • Organization • Memory	• Organization • Memory • Follow procedures	• Communication	• Count • Estimate • Time management	• Write • Math-time

V. Inventory

A. Trouble Shooting

1. Determine missing stock or lo/out problems	2. Check data base and location	3. Investigate stock history in computer	4. Review receiver history	5. Compile and verify stock locations from receivers	6. Check all locations	7. Check load/unload sheets against rewarehousing	8. Review item activity of requisition, if required
• Communicate with management, CSR or AE's • Get oral or computer information to analyze, research • Read reports and documents • Trace "paper trail," reweigh, reconstruct historical evidence • Check sequence of procedural steps versus short cuts • Explain results • Re-check math • Estimate	• Compare, read and write • Computer entry	• Analyze, prioritize, contrast, solve, research, read dates, activity changes, shipments versus adjustments • Communicate - orally report results	• Re-check documents, math, codes, entry of materials into correct company division • Communicate theory or logic to other personnel	• Attention and concentration skills • Following procedures • Read and write	• Attention and concentration skills • Follow procedures • Read and write	• Attention and concentration skills • Follow procedures • Read and write	• Determine/research sequences in computer history • Keyboarding • Interpretation • Write • Calculate

9. Check area and lead person for missing materials	10. Check entire warehouse for item still missing
• Communicate problem • Follow logical steps to conclusion • Share information	• Gather information to make decision on how to conduct search • Form a team to search • Follow procedural methodology of looking • Use sample for comparisons

TASKS

B. Scrap Notices

1. Get scrap notice from customer service representative	2. Verify stock from pick list	3. Pull or check sample	4. Estimate count of scrap (QC)	5. Investigate status on item, then freeze inventory	6. Remove stock to skid	7. Archive material as instructed	8. Create list of items on skid
• Communication	• Read for code, description, company division • Visual check for mixed stock • Report variances	• Follow procedures	• Careful math calculation • Report variances • Discuss with supervisor • Estimate	• Follow procedures • Read, compare, count document • Reduce physical stock and record • Collate documentation • Archive	• Transfer work • Analyze needs for material handling aids • Keep documents with materials	• Follow instructions	• Write or QC check lists • Double check lists

9. Label skids with client name and order number	10. Move to scrap trailer	11. Check scrap samples against scrap notice	12. Contact scrap removal service when trailer full	13. Transfer scrap to removal service trailer	14. Provide master list to removal service	15. Update computer system for unloads
• Identify clearly	• Possible communication to access help	• Visual discrimination • Compare/contrast	• Telephone skills • Schedule • Communicate in detail to vendor on types of printed materials to be picked up	• Safety verification of transfer • Get documents signed by trucker	• Documentation and explanation of document	• Keyboarding • Read • Compare report to zero balance information to "unload"

C. Quality Control

1. Get printout from MIS	2. Check stock against report	3. Find missing stock not reported in computer	4. Find locations to be unloaded	5. Update database	6. Complete and distribute MDR form, if required	7. Compute percentage of QC errors
• Follow procedures • Documentation • Compare	• Communication - oral/written requests of proper reports and scheduling when report is needed	• Trace through computer and or written documents • Intense planning for solution, communicate bad news • Decision making	• Attention, concentration and make lists neatly	• Computer skills - keyboarding • Read • Decision making • Communicate and clarify confusing information	• Write	• Math - +, -, x, / • Write report • Interpret reasons, both oral and written • Call employee meeting to explain a bad situation

D. Physical Count

1. Receive computer count from customer service	2. Check item activity in database	3. Investigate status on item	4. Count stock at location	5. Perform count	6. Complete physical count form	7. Make copy for inventory department file	8. Return to customer service and inventory manager
• Communication	• Read understand how to read information meaningfully	• Research	• Math - +, -, x, / calculation • Record information	• Math - scale operating procedures • Record - use calculator	• Write clearly	• Follow procedures	• Oral written communication

E. Hi/lo Operator

1. Perform maintenance check	2. Follow proper safety procedures	3. Locate processed material	4. Perform re-warehousing duties	5. Generate load unload sheet	6. Unload difficult deliveries	7. Generate rewarehousing sheet	8. Pick bulky heavy items
• Visual check lists • Decision making - estimate evaluate	• Decision making	• Follow procedures • Decision making • Write clearly • Read • Forward information	• Follow procedures	• Follow procedures	• Team work • Decision making • Planning • Time estimation	• Decision making - relocate material • Write clearly	• Safety procedures • Team work

1. Load vans trucks	2. Complete space report	3. Consolidate stock
• Prioritize • Organize • Communicate	• Read and write - record accurately	• Plan and execute plan • Team work • Record results promptly

TASKS

F. Special large shipments

1. Get job jacket from CSR	2. Log job jacket in book or on computer	3. Read job jacket to verify accuracy	4. Coordinate pick list with hi/lo operators	5. Pick material	6. Count/weigh material	7. Repack materials as per specs	8. Verify correct labeling and quantity
• Read • Communicate carefully	• Write • Accuracy	• Read • Communicate	• Plan • Team work • Organize • Decision making	• Prioritize • Read and record • Communicate	• Follow scale and manual counting procedures • Math - +, x	• Plan • Organize • Count	• Read • Compare • Record

9. Restock cartons	10. Generate packing list	11. Number each skid	12. Complete shipping tickets	13. Request updated quantities on requisition	14. QC requisition against packing list	15. Shrink wrap and band all skids	16. Load truck
• Read specs • Follow procedures	• Type carefully • Compare against written list	• Count/verify • Write • Label	• Count/verify • Write • Label	• Communication • Instructions	• Compare/read • Note variances • Plan/execute changes	• Manual dexterity • Safety procedures	• Follow loading instructions - verbal • Safety procedures

G. Data Input

1. Obtain load/unload sheets	2. Unload load screen on database	3. Update unload screen on database	4. Verify stock with CSR	5. Obtain solution from CSR
• Communication • Read	• Computer • Read	• Computer • Read	• Communication • Decision making	• Communication • Execute plan

H. Maintenance

1. Get materials	2. Recommend reordering of supplies	3. Clean all areas in building	4. Recycle trash	5. Operate cardboard compactor	6. Service coffee machine	7. Police outside areas
• Decision • Communication • Write	• Decision • Communication • Write	• Organization • Plan • Schedule	• Decision making • Safety procedures	• Safety procedures	• Organization	• Organization

I. Premium Cage

1. Receive pick list	2. Pick requisition for production and pick/pack	3. Help receiving department	4. Locate premium operator	5. Rewarehouse material in cage	6. Maintain inventory control	7. Consolidate inventory	8. Monitor cage security
• Communication • Read	• Read and write • Compare/contrast	• Read and write • Team work	• Communicate • Prioritize	• Organization • Plan • Decision making • Write	• Memory • Organization • Communication	• Decision making • Write • Plan	• Follow procedures

9. Inform inventory manager of shortage of stock	10. Reconcile information with inventory manager
• Communication to other departments	• Communication • Compare/contrast

VI. Mailroom Clerk

A. Set Up

1. Get job jacket or copy request form	2. Read job jackets for instructions	3. Request appropriate materials	4. Log job	5. Capture job time	6. Record number of copies	7. Prioritize rush jobs	8. Maintain interrupted job counts
• Read • Communicate	• Read/track information and quantity	• Communicate - if specific materials needed, e.g. letterhead	• Write date, account number, and name into log book	• Write time for copying	• Add (for 2-sided copies) • Communicate	• Read date first • Decision making - which job to start first or call CSR	• Math - subtract number of copies and copies already done

TASKS

B. Scrap Notices

1. Get scrap notice from customer service representative	2. Verify stock from pick list	3. Pull or check sample	4. Estimate count of scrap (QC)	5. Investigate status on item, then freeze inventory	6. Remove stock to skid	7. Archive material as instructed	8. Create list of items on skid
• Communication	• Read for code, description, company division • Visual check for mixed stock • Report variances	• Follow procedures	• Careful math calculation • Report variances • Discuss with supervisor • Estimate	• Follow procedures • Read, compare, count document • Reduce physical stock and record • Collate documentation • Archive	• Transfer work • Analyze needs for material handling aids • Keep documents with materials	• Follow instructions	• Write or QC check lists • Double check lists

9. Label skids with client name and order number	10. Move to scrap trailer	11. Check scrap samples against scrap notice	12. Contact scrap removal service when trailer full	13. Transfer scrap to removal service trailer	14. Provide master list to removal service	15. Update computer system for unloads
• Identify clearly	• Possible communication to access help	• Visual discrimination • Compare contrast	• Telephone skills • Schedule • Communicate in detail to vendor on types of printed materials to be picked up	• Safety verification of transfer • Get documents signed by trucker	• Documentation and explanation of document	• Keyboarding • Read • Compare report to zero balance information to "unload"

C. Quality Control

1. Get printout from MIS	2. Check stock against report	3. Find missing stock not reported in computer	4. Find locations to be unloaded	5. Update database	6. Complete and distribute MDR form, if required	7. Compute percentage of QC errors
• Follow procedures • Documentation • Compare	• Communication - oral/written requests of proper reports and scheduling when report is needed	• Trace through computer and/or written documents • Intense planning for solution, communicate bad news • Decision making	• Attention, concentration and make lists neatly	• Computer skills - keyboarding • Read • Decision making • Communicate and clarify confusing information	• Write	• Math - +, -, x, / • Write report • Interpret reasons, both oral and written • Call employee meeting to explain a bad situation

D. Physical Count

1. Receive computer count from customer service	2. Check item activity in database	3. Investigate status on item	4. Count stock at location	5. Perform count	6. Complete physical count form	7. Make copy for inventory department file	8. Return to customer service and inventory manager
• Communication	• Read/understand how to read information meaningfully	• Research	• Math - +, -, x, /; calculation • Record information	• Math - scale operating procedures • Record - use calculator	• Write clearly	• Follow procedures	• Oral/written communication

E. Hi/lo Operator

1. Perform maintenance check	2. Follow proper safety procedures	3. Locate processed material	4. Perform re-warehousing duties	5. Generate load/unload sheet	6. Unload difficult deliveries	7. Generate rewarehousing sheet	8. Pick bulky/heavy items
• Visual check lists • Decision making - estimate evaluate	• Decision making	• Follow procedures • Decision making • Write clearly • Read • Forward information	• Follow procedures	• Follow procedures	• Team work • Decision making • Planning • Time estimation	• Decision making - relocate material • Write clearly	• Safety procedures • Team work

1. Load vans trucks	2. Complete space report	3. Consolidate stock
• Prioritize • Organize • Communicate	• Read and write - record accurately	• Plan and execute plan • Team work • Record results promptly

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TASKS

F. Special large shipments

1. Get job jacket from CSR	2. Log job jacket in book or on computer	3. Read job jacket to verify accuracy	4. Coordinate pick list with hi/lo operators	5. Pick material	6. Count/weigh material	7. Repack materials as per specs	8. Verify correct labeling and quantity
• Read • Communicate carefully	• Write • Accuracy	• Read • Communicate	• Plan • Team work • Organize • Decision making	• Prioritize • Read and record • Communicate	• Follow scale and manual counting procedures • Math - +, x	• Plan • Organize • Count	• Read • Compare • Record

9. Restock cartons	10. Generate packing list	11. Number each skid	12. Complete shipping tickets	13. Request updated quantities on requisition	14. QC requisition against packing list	15. Shrink wrap and band all skids	16. Load truck
• Read specs • Follow procedures	• Type carefully • Compare against written list	• Count/verify • Write • Label	• Count/verify • Write • Label	• Communication • Instructions	• Compare/read • Note variances • Plan/execute changes	• Manual dexterity • Safety procedures	• Follow loading instructions - verbal • Safety procedures

G. Data Input

1. Obtain load/unload sheets	2. Unload load screen on database	3. Update unload screen on database	4. Verify stock with CSR	5. Obtain solution from CSR
• Communication • Read	• Computer • Read	• Computer • Read	• Communication • Decision making	• Communication • Execute plan

H. Maintenance

1. Get materials	2. Recommend reordering of supplies	3. Clean all areas in building	4. Recycle trash	5. Operate cardboard compactor	6. Service coffee machine	7. Police outside areas
• Decision • Communication • Write	• Decision • Communication • Write	• Organization • Plan • Schedule	• Decision making • Safety procedures	• Safety procedures	• Organization	• Organization

I. Premium Cage

1. Receive pick list	2. Pick requisition for production and pick/pack	3. Help receiving department	4. Locate premium operator	5. Rewarehouse material in cage	6. Maintain inventory control	7. Consolidate inventory	8. Monitor cage security
• Communication • Read	• Read and write • Compare/contrast	• Read and write • Team work	• Communicate • Prioritize	• Organization • Plan • Decision making • Write	• Memory • Organization • Communication	• Decision making • Write • Plan	• Follow procedures

9. Inform inventory manager of shortage of stock	10. Reconcile information with inventory manager
• Communication to other departments	• Communication • Compare/contrast

VI. Mailroom Clerk

A. Set Up

1. Get job jacket or copy request form	2. Read job jackets for instructions	3. Request appropriate materials	4. Log job	5. Capture job time	6. Record number of copies	7. Prioritize rush jobs	8. Maintain interrupted job counts
• Read • Communicate	• Read/track information and quantity	• Communicate - if specific materials needed, e.g. letterhead	• Write date, account number, and name into log book	• Write time for copying	• Add (for 2-sided copies) • Communicate	• Read date first • Decision making - which job to start first or call CSR	• Math - subtract number of copies and copies already done

VIII. Mail

TASKS →

A. Postage Calculating

1. Maintain balances	2. Request amount for balances	3. Request amount for large jobs	4. Reconcile post office balances	5. Maintain permit balances	6. Update files and records
• Math • Read and write	• Math • Communication • Decision making • Compare/contrast • Math - prices per job; keep in monies available	• Math • Communication • Decision making • Compare/contrast	• Communication • Decision making • Read	• Write • Math	• Math • Read and write • Clerical

B. Mail Metering

1. Receive completed material from departments	2. Check shipping ticket for method	3. Calculate postage per piece	4. Record meter information to postage slip	5. Clear meter	6. Record number in log book	7. Set postage meter for postage to be used	8. Run material through meter machine
• Communication • Prioritization	• Read • Compare/contrast	• Math - price per piece	• Write • Math • Clerical	• Decision making • Calculation	• Write • Clerical • Math	• Read • Math	• Decision making

9. Perform QC check	10. Place metered material into mail bins	11. Place mail bins on the pallet	12. Verify counts and postage	13. Record information onto meter slip and log book
• Communication of discrepancies • Decision making • Compare/contrast	• Decision making - Math - how many per bin	• Decision making - how many on skid and where will it be staged	• Read • Math	• Read and write • Clerical

C. Permit Mail

1. Receive material from departments	2. Check shipping ticket for method	3. Calculate postage per piece	4. Verify counts	5. Sort and tie sack	6. Process permit mail forms	7. Schedule delivery to post office
• Communication • Prioritization	• Read • Decision making	• Math - +, -, x, /	• Math	• Read - zip code in order; using charts • Decision making - number of pieces to tie and which sack it goes into	• Read and write • Math	• Decision making • Communication • Prioritization

D. Maintain equipment

1. Order supplies	2. Schedule repairs	3. Perform adjustments/ minor repairs	4. Follow housekeeping procedures
• Communication • Prioritization • Math	• Decision making • Communication	• Decision making • Analyzing	• Read • Decision making

VOCABULARY

Ambidextrous - can use both hands
Archive - save material as instructed by CSR
Bar code - tracking label for appropriate carrier
Breakdown - separate items by requirement
Cage - security area for premium items
Control logs - computer printout listing priority shipment
C.S.R. - customer service representative
Dead orders - orders not on regular list; picked before inputted on computer; "RUSH orders"

Freeze inventory - stop all activity on inventory until inventory supply releases material
H+D copy request form - internal request form
Job board color code status -
Green = logged in
Blue = in process
Red = past due to original deadline set
Job jacket - detailed instructions and information describing how to do the job
Lo and Out Reports - low and zero stock balance
Load - enter information into computer
Load/unload sheet - form used to add or delete items from locations and to update computer

Located - physically moving inventory to specific area
Location -
P = single carton location, small shelf
R = small, reserved location
W = bigger warehouse
Material Discrepancies Report - physical count differs from computer balance
Non-inventory receipts - materials forwarded which bipass normal receiving procedures
Physical count - actual count of each item
Premium - any client items that have a monetary value to client

Prework - any preliminary work that can be performed before assembly to increase overall productivity of project
Rewarehousing sheet - to relocate stock to lower level
Scrap - material that customer no longer wants to exist
Space Report - form to notify space available in location
Staging area - area where completed merchandise is kept until it is placed in rack

Status Reports -
0 = material received
1 = material authorized
2 = material entered in PC
3 = receiving history updated
4 = customer service approval
S.T.S. - sort-tie-sack; separate mail by zip code, rubber band and group tape
Tare - weight of carton minus packing; used to zero-out weight of carton
Tracer - action taken to locate shipment
Turn around time - time required to complete work

TRAITS AND ATTITUDES

Able to put in overtime
Ambidextrous
Common sense
Cooperative
Cross-trained
Dexterous
Flexible
Good attendance
Good communicator
Healthy
Honest
Independent
Innovative
Intelligent
Leader
Motivated
Open-minded
Organized
Patient
Positive
Productive
Punctual
Quality minded
Respectful
Smart
Strong
Team worker
Unbiased
Understanding
Versatile

TOOLS AND EQUIPMENT

Aprons
Bags
Band cutters
Banker
Bubble wrap
Calculators
Cartons
Carts
Chairs
Computer
Copy machine
Corrugated boards
Desks
Electric stapler
Envelope opener
File cabinets
Folding machine
Hi/Lo
Hole puncher
Jack (electric and manual)
Knife
Label machine
Labor card
Location tags
Mail meter
Order picker
Packing paper
Paper
Paper clips
Paper cutter
Pens
Printer
Rubber bands
Rubber gloves
Rulers
Scales
Scissors
Shrink wrap machine
Skid
Stamps
Staple remover
Stapler
Tacky finger
Tape
Tape dispenser
Tape guns
Time clock

KNOWLEDGE AND SKILLS

Bi-lingual
Communication Skills
Computers - Word Perfect 5.1, DOS Shell, Windows
Data Entry
Driver's license
First aid - CPR, BLS
Heavy lifting - lifting up to 70 lbs.
Light construction
Math (+, -, x, /)
Memory
Operate machines
Organizational Skills
Prioritizing skills
Reading - instructions, pick list, job jacket, work orders, requisitions, computer printouts
Safety
Time management
Vocabulary
Writing - pick list, procedures, memos, letters

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P. R. I. D. E.

DACUM
M. GRUMBACHER INC.
PRODUCTION

DACUM PANEL MEMBERS

Gary Barresse - Industrial Engineer, Manufacturing
Garry Davis - Paper
Mamie Gardner - Filling
Wayne Hoyte - Chemist, Research & Development
Bob Hughes - Management, Paper
Jacqueline King - Laboratory
Ida Korma - Pick/Pack
Osvaldo Ortiz - Milling
Harshad Patel - Filling

DACUM FACILITATOR

Raymond Procaccini
Curriculum Developer, MCCC

RECORDERS

Elaine Weinberg
Director, Workplace Skills Project, MCCC
Florence Sult
Administrative Secretary, MCCC

DATE

December 8, 9 and 13, 1993

LOCATION

M. Grumbacher Inc.

The **PRODUCTION EMPLOYEE TEAM** generates quality artist materials such as paint, paint sets, pads, pastels and various mediums. Using strict quality control methods, they mill, fill, pick, pack, assemble, bind and ship these materials to respond to the demands of the global market place.

I. Receiving/Shipping

TASKS →

A. Receiving Raw Materials

1. Take manifest from truck driver	2. Contact hi/lo operator	3. Unload truck	4. Review manifest against shipment	5. Perform QC check	6. Approved by quality control	7. Input data inventory into computer system	8. Transfer to inventory
• Read manifest to identify products • Count quantity of order • Compare shipment with order • Calculator • Math — x, +	• Communicate/speak English clearly • Telephone skills	• Operate hi/lo • Read manual to pass driver's test • Problem solve most efficient method	• Decisions • Calculation - x, / • Math - quantity verification • Communication with Receiving and Purchasing	• Safety - handling raw materials • Read MSDS sheets, substance sheets • Labels on packs	• Communicate with Receiving and Shipping, supervisors and peers	• Typing skills - PC operators • Reading - compare and contrast	• Communicate with receiving clerk and hi/lo operator • Reading - documentation, location, directions • Writing - forms • Math - +, -, x, /

B. Quality control

1. Read order	2. Inspect incoming product	3. Take samples to lab	4. Obtain approval	5. Decide action if rejected	6. Place "QC hold" label on rejected material, if needed	7. Contact supervisor	8. Inform Purchasing of shipment quality
• Read list	• Reading - compare to invoice	• Reading - comprehend written instruction • Understand part specs • Communicate - oral and written	• Fill out approval form and sticker • Complete documentation	Communicate - • Written - material movement form • Oral - talk to appropriate people	• Analyze problem • Communicate with supervisor • Deductive reasoning • Written, verbal reports	• Communication	• Communication • Math - count, estimate

C. Delivering

1. Take packing invoice from UPS driver	2. Compare invoice with shipment	3. Decide method of transfer to departments	4. Deliver to proper departments	5. Get appropriate signatures	6. File invoice
• Follow procedures	• Read manifest to identify products • Count quantity of order • Compare shipment with order • Calculator — +, x, /	• Decision making • Prioritizing - cause and effect	• Read lists • Communicate - oral • Prioritize	• Read form • Verbal - from purchasing • Verbal hierarchy	• Alphabetize

D. Shipping

1. Contact trucking company	2. Call hi/lo operator to weigh material	3. Check weight of skid	4. Check shrink wrap on skid	5. Check manifest order on skid	6. Place in staging area	7. Wait for truck	8. Call hi/lo operator to load truck
• Math - cost of transportation • Telephone communication - weight, size, destination • Read transportation form	• Math • Communication	• Math — +, x, -, decimals	• Visual discrimination • Problem solving • Following procedures	• Read for completeness • Numeracy • Compare/contrast	• Height requirement - skids up to 91" (48" x 42" = 1 skid) • Problem solving - larger and heavier skids placement • Math - How many skids per truck	• Reading schedules	• Communication • Following instructions

9. Forward paperwork to truck driver
• Written paperwork - bill of lading and weight list

II. Laboratory Assistant

TASKS

A. Incoming QC Testing

1. Get sample from Receiving Department	2. Record new information in lab report book	3. Run comparative tests as required	4. Compare results to part specs	5. Report results to supervisor for approval	6. Record report in lab book when approved	7. Inform Purchasing and Receiving of shipment quality
• Verbal communication • Read receiving report	• Transfer information from receipt to book • Writing forms • Reading lab book for directions • Understanding chemical vocabulary	• Filing system • Look up information from lab • Calculate viscosity from table • Read directions from form; follow instruction • Deductive reasoning • Safety issues	• Reasoning • Decision making • Reading - part specs	• Communicate with supervisor • Read and interpret form	• Complete form	• Oral communication • Written report

B. Research and Development

1. Gather materials	2. Discuss workplan with chemist to determine objectives	3. Weigh raw materials	4. Mix raw materials	5. Mill sample if required	6. Assess results of product	7. Adjust if necessary	8. Return sample to lab
• Determine locations - problem solving • Communication - oral & written • Request data entry from Inventory	• Communication skills	• Decimals - metric grams, kilo • Calculate - multiply, add size of sample (% of formula to size of sample)	• Follow instruction • Safety procedures • Read instructions to operate equipment	• Problem solving • Mechanical ability • Memory skills • Read manuals • Follow instructions	• Deductive reason • Communication • Memory skills	• Decision making	• Following procedures

9. Run tests to determine performance	10. Write report in lab book	11. Discuss results with supervisor
• Time management • Read manuals	• Write paragraphs • Organizational skills - spelling, grammar, writing skills	• Communications • Problem solving

C. QC Manufacturing Milling

1. Receive sample in process	2. Run comparative test	3. Retrieve formula from file if required	4. Compare file formula with operator's work order	5. Compare results to past production record	6. Record results on work order	7. Discuss sample with supervisor	8. Recommend adjustment to product
• Read label, decision making • Read procedures manual	• Follow written and oral instructions • Write results	• Read formula • Write results • Decision making	• Read formula • Compare/contrast • Deductive reasoning • Read work order	• Read records • Compare/contrast	• Write results • Check accuracy	• Communicate effectively with mill operator • Give instruction orally	• Written/oral instructions • Transmit information to appropriate personnel

9. Resample product	10. Retest sample	11. Confirm results with supervisor	12. Approve sample to floor if meet specs.
• Read label, lab procedures • Read procedures	• Follow written/oral procedures • Decision making	• Oral communication skills • Compare/contrast	• Interpret results • Write lab report • Decision making • Written/oral interpretation

TASKS

D. QC Manufacturing Filling/Paper

1. Check work order with finished sample	2. Obtain one complete product for in-process inspection	3. Calculate weight or count pieces	4. Bring two samples to lab for evaluation	5. Perform quality control	6. Keep samples for "retain" in lab	7. Give OK to filling area to run products	8. Perform quality control for paint, paper and sets
• Reading - compare to work order • Compare specs	• Read written instructions • Oral communication • Interpret lab specs	• Math (+, -, x, /, %) • Measure-grams/ounces • Count	• Communicate with manufacturing • Prioritize work	• Analyze • Communicate with supervisor	• Read label • Complete lab report in writing • Follow procedures	• Decision making skills • Oral communication • Transmit information to proper personnel	• Read procedures • Communication skills • Write lab reports • Time management

E. Clerical Work

1. Type labels	2. Type and file production reports	3. Type memos and letters	4. Answer phones
• Proofreading	• Proofreading • Follow directions • Business writing skills • Grammar • Spelling	• Proofreading	• Customer service • Oral communication • Decision making • Write messages • Listening • Transmit information to proper personnel

F. Solid Waste Control

1. Distribute empty drums	2. Label drums	3. Compress waste	4. Return waste drums	5. Seal filled drums	6. Label and date drum with appropriate information	7. Transfer drum to cage	8. Manifest waste quarterly
• Read procedures • Read OSHA Regulations • Read and understand directions • Determine cubic measurement	• Write labels	• Decision making	• Read procedures	• Read and follow procedures	• Interpret and write numbers • Write labels • Read and write English	• Follow job to completion	• Write reports • Prioritize

9. Give paperwork to driver	10. Return drums to cage
• Oral/written communication • Follow directions	• Decision making • Follow procedures

G. Hazardous liquid waste control

1. Receive liquid waste from kitchen	2. Relocate liquid waste filled drums to shipping	3. Run PH test	4. Manifest waste from site with PH results	5. Return empty drums and totes to hazardous waste area
• Read safety procedures • Read directions	• Problem solving • Follow directions	• Follow procedures • Read lab report	• Write/complete labels • Read/transmit results to proper personnel	• Decision making • Read/follow directions

III. Paper - (entry level position)

A. Hi/Lo Operator - Pick

1. Receive kit Picking Report	2. Locate materials	3. Verify part numbers, quantities and weights	4. Retrieve materials to department staging area	5. Complete paperwork	6. Return paperwork to supervisor
• Read and prioritize lists • Read numbers	• Decision making • Math skills (+, -) • Read codes and work order	• Compare and contrast • Interpret arithmetic information	• Sequence operation	• Write reports • Perform physical count (natural numbers)	• Follow directions • Written/oral communication • Transmit information to proper personnel

TASKS

B. Collating

1. Read order	2. QC raw material	3. Place backer	4. Count paper	5. Square paper	6. Pad and cover	7. Choose placement of cover from work order	8. Place pad on cart
• Read work order	• Decision making • Read procedures • Compare specs	• Follow directions • Decision making • Adding, estimating • Counting (real numbers) • Sequence operation	• Follow directions • Decision making • Adding, estimating • Counting (real numbers) • Sequence operation	• Follow directions • Decision making • Adding, estimating • Counting (real numbers) • Sequence operation • Determine angles of measurement	• Follow math procedures	• Read directions	• Decision making

9. Bundle paper	10. Bring paper to cutter	11. Clean work area
• Counting (natural numbers)	• Oral communication	• Read/follow procedures

C. Cutting

1. Measure pads	2. Set up cutting program on machine	3. Push bundles into machine	4. Adjust bundles	5. Press buttons to start machine	6. Remove bundles	7. Decide whether bundles go to line (binding) or table (hole puncher)
• Math (fractions +, -, x, /)	• Read instructions	• Read/follow safety procedures	• Decision making	• Machine dexterity	• Follow directions	• Decision making • Follow directions • Transmit information to proper personnel

D. Hole punching

1. Place one pad on machine	2. Place appropriate amount of paper in machine	3. Square paper	4. Depress foot pedal	5. Remove paper from machine	6. Quality control paper	7. Flip paper over	8. Place paper on table
• Read directions	• Counting (real numbers) • Estimating	• Decision making • Sequence operation	• Machine dexterity	• Follow direction	• Read procedures • Compare specs	• Interpret directions	• Interpret directions

9. Bundle pads into stacks	10. Square bundles	11. Flip bundles	12. Place bundles on another table	13. Send bundles to cutter
• Counting • Estimating	Math - angles	• Sequence operation	• Sequence operation	• Written/oral communication to proper personnel

E. Binding

1. Stagger bundles	2. Prepare and clean machine	3. Place pad in machine	4. Run machine for glue or tape	5. Take pad from machine	6. Place pads in bundles	7. Place pads on cart	8. Take cart to cutter
• Read procedures	• Read/follow proper procedures • Follow directions	• Apply safety procedures	• Machine dexterity	• Follow directions • Estimating	• Counting • Estimating • Write labels	• Follow directions	• Oral communication of information to cutter

9. Cut to specification on pad
• Read specs • Interpret specs • Decision making

TASKS

F. Spiraling

1. Set up machine	2. Measure pad to set machine	3. Place single pads on hooks	4. Jog pad	5. Start machines	6. Remove pad	7. Place pad on line	8. Alternate direction of pads
• Read/follow procedures	• Math (+, -, x, /) • Read ruler	• Machine dexterity	• Machine dexterity	• Read safety procedures	• Follow directions	• Follow directions	• Read and follow directions

9. Stack pads	10. Send pads to packing
• Counting (real numbers)	• Oral communication of instruction to proper personnel

G. Packing

1. Read order	2. Choose appropriate box	3. Make box	4. Seal books, if required	5. Make labels	6. Place labels on boxes	7. Place pads in box	8. Tape box
• Read work order	• Decision making	• Follow directions	• Follow directions	• Write labels	• Read labels and follow directions	• Decision making	• Follow directions

9. Place box on skid	10. Record quantity on inventory control form	11. Bring boxes to staging area
• Read/follow procedures	• Write/complete form • Math (+, -, x, /)	• Transmit information to proper personnel

H. Hi/Lo Operator - Return

1. Verify product and quantity against return sheet	2. Return product to empty storage location	3. Complete return sheet	4. Return paperwork to supervisor
• Math (+, -, x, /) • Counting	• Decision making	• Write return sheet information	• Transmit paperwork to proper personnel • interpret written/oral instructions

IV. Milling

A. Weighing

1. Calibrates Scales	2. Reads formulas or work orders	3. Selects proper pot/vat size and type	4. Adds raw materials to pot/vat	5. Selects proper mixer	6. Operates mixer	7. Cleans mixer
• Read scale • Select proper weight • Interprets work order • Decision making • Report problems	• Reads instructions • Sequence of operations • Follows oral instructions • Communicate with supervisor	• Math (+, -, x, /) • Decision making	• Math (+, -, x, /) • Read scale • Read labels • Follow safety procedures	• Math (+, -, x, /) • Decision making	• Read manuals • Read guages • Interpret work order • Math (+, -, x, /) • Decision making • Follow safety procedures	• Read manuals • Follow safety procedures

TASKS

B. Mill Paint

1. Clean machine	2. Read work order	3. Adjust mill	4. Run Job for first pass	5. Take sample to lab	6. Complete run, if approved	7.Complete second run, if not approved	8. Make appropriate adjustments
• Interpret cleaning instructions/manual • Follow oral/written instructions • Read safety manuals	• Read/scan work order for instructions/ procedures	• Interpret work order • Follow written/oral instructions • Machine dexterity • Interpret machine manuals • Math (+, -, x, /) • Decision making	• Sequence operation	• Follow procedures	• Interpret written oral instructions	• Sequence operation • Follow oral/written communication	• Follow instructions • Write instructions • Read/follow safety manuals, machine manuals, work order

9. Complete run	10. Weigh paint	11. Label paint	12. Bring to staging area	13. Clean machine	14. Complete production form
• Follow/interpret written/ oral instructions	• Math (+, -, x, /) • Measure in pounds, kilos	• Write label	• Follow directions	• Interpret cleaning manuals • Follow oral/written instructions/safety procedures	• Math (+, -, x, /) • Writing

C. Pastel Preparation

1. Read work order	2. Pick materials from inventory	3. Weigh materials	4. Disperse materials	5. Perform QC check	6. Put materials into pan	7. Dry materials in oven	7. Remove from oven
• Read/scan work order for instructions	• Read labels, codes, numbers	• Math - decimals, fractions, whole numbers (metric)	• Prioritize sequence	• Read product instruction/procedures	• Sequence operation	• Sequence operation	• Sequence operation

9. Break up pastel sheets	10. Place chunks in pulverizer machine	11. Weigh powder	12. Make label	13. Place powder in presser machine	14. Run machine	15. Make one stick for quality control check	16. Take stick sample to lab
• Sequence operation	• Sequence operation	• Metric math (whole numbers, fractions, decimals)	• Write label • Proofread • Follow instructions	• Sequence operation • Decision making • Machine dexterity	• Read/follow safety procedures • Read/follow machine manual	• Communicate with all levels of organization	• Sequence operation

17. Get approval	18. Select/sleeve pastels (long sticks)	19. Select/box small pastels	20. Shrink wrap long pastels	21. Program inkjet coder to label	22. Roll onto conveyor belt	23. Verify label accuracy	24. Box pastels
• Read/write directions • Communication	• Decision making • Read/follow directions	• Read/follow procedures	• Read/follow directions • Read/follow machine, safety directions	• Read codes (whole numbers) • Number discriiminator	• Sequence operation	• Proofread label • Oral/written • Communication if error is found	• Decision making

25. Label boxes	26. Send boxes to stock
• Write labels • Proofread labels • Decision making	• Write/complete stock form • Follow written procedures

V. Filling

A. Hi/Lo Operator - Pick

1. Receive Kit Picking Report	2. Locate materials	3. Verifies part numbers, quantities and weights	4. Retrieve materials department stagi
• Read/scan work order	• Prioritize tasks • Read pick slip	• Compare and contrast • Interpret arithmetic information	• Decision making • Read/follow proced

B. Tube labeling

1. Read order	2. Fill out time card	3. Change over labels in machine	4. Put tubes in mach
• Read work order	• Compute using (+, -, x, /) whole, fraction and decimal numbers	• Read/follow directions • Proofread • Machine dexterity	• Read labels • Read machine man • Decision making

9. Count tubes	10. Place tubes in box	11. Place box on skid	12. Complete produc form (supervisor)
• Math - counting whole numbers	• Read/follow oral/written directions • Decision making	• Sequence operation • Read/follow shipment direction	• Math (+, -, x, /) • Writing

C. Service Operator

1. Clean machine	2. Operate Hi/Lo to lift paint to hopper	3. Read order	4. Transfer paint in h
• Interpret cleaning manuals • Interpret safety manuals	• Read operator's manual	• Read/follow written directions	• Sequence operatio

9. Inform supervisor of completion
• Interpret/follow written/ oral directions

TASKS

D. Mechanics

1. Receive work order from supervisor	2. Set up machine/coders	3. Run sample	4. Adjust machine	5. Check for accurate crimping	6. Assure accuracy of label and weight	7. Take sample to lab	8. Confirm sample with inspector
• Read work order • Prioritize schedule of workers • Transmit information to proper personnel	• Read machine manuals • Read safety manuals • Follow written/oral directions	• Write sample label	• Read machine • Read procedures manual • Follow written/oral communications	• Decision making	• Proofread	• Decision making • Follow written/oral procedures	• Decision making • Follow written/oral procedures • Communications

9. Confirm with supervisor to run product
• Follow written/oral directions and communications

E. Machine Operator

1. Read work order	2. Verify/match tubes and paint with order	3. Count tubes	4. Place empty tube on tube holder in machine	5. Check overall quality control	6. Conveyor carries tubes to packer	7. Check order for completeness	8. Notify supervisor when finished
• Read instructions	• Proofread labels and paint • Follow written directions	• Math - counting (whole numbers)	• Sequence operation	• Read procedure • Decision making	• Sequence operation	• Verify information • Compare specs	• Interpret oral/written directions • Submit information to proper personnel

F. Packer - (entry level position)

1. Read order	2. Prepare inner-pack boxes to be packed	3. Pack tubes into inner boxes	4. Stamp number and color on boxes	5. Pack inner pack into master pack	6. Seal and identify boxes	7. Stack boxes on skid	8. Check to see if order is complete
• Read instructions	• Follow/read procedures	• Sequence operation • Follow directions	• Proofread proper numbers on stamps • Read directions	• Sequence operation	• Write labels/boxes • Follow directions	• Read/follow procedures for stacking/shipping	• Compare/contrast to work order

9. Notify supervisor when complete	10. Release boxes to hi/lo operator
• Submit information to proper personnel • Interpret oral/written communications	• Submit information to proper personnel • Communication

G. Hi/Lo Operator - Return

1. Verify product and quantity against return sheet	2. Return product to empty storage location	3. Complete return sheet	4. Return paperwork to supervisor
• Read/contrast/compare return sheet to product	• Decision making	• Write up return sheet	• Submit information to proper personnel

VI. Assembly - (entry level position)

TASKS

A. Hi/Lo Operator - Pick

1. Receive Kit Picking Report	2. Locate materials	3. Verify part numbers, quantities and weights	4. Retrieve materials to department staging area	5. Complete paperwork	6. Return paperwork to supervisor
• Read safety procedures • Read pick report	• Decision making • Prioritize picking	• Read/contrast/compare • Math - estimating (+, -, x, /), counting and reading scale	• Sequence operation	• Write/complete paperwork	• Submit information to proper personnel • Communication

B. Job Preparations (Lead Person)

1. Read work order	2. Collect materials	3. Place materials on table according to order	4. Perform QC check
• Follow written instructions • Interpret directions from supervisor	• Decision making • Prioritize collection approach • Communicate	• Sequence/compare items to order	• Decision making • Verify information

C. Assemble

1. Get sample from lead person	2. Check for correct assembly	3. Assemble according to sample	4. Perform quality control	5. Shrink wrap set if required	6. Perform QC check	7. Place sets into master carton	8. Identify appropriate code/label on box
• Interpret directions	• Verify directions	• Read/follow directions (work order)	• Decision making • Follow written procedures	• Sequence operation	• Verify information/product • Decision making • Proofread	Sequence operation	Proofread

9. Quality control quantity on skid	10. Get approval from supervisor	11. Call hi/lo operator to bring carton to staging area
• Read/follow procedures	• Interpret written/oral communication	• Submit information to proper personnel • Read oral/written procedures and follow directions

D. Hi/Lo Operator - Return

1. Verify product and quantity with return sheet	2. Return product to empty storage location	3. Complete return sheet	4. Return paperwork to supervisor
• Read/contrast/compare return sheet to product	• Decision making	• Write information	• Submit information to proper personnel

VII. Picker/Packer

A. Picking

1. Receive pick list from supervisor	2. Choose locations for finding orders	3. Go to those locations	4. Pick product	5. Use hand jack, if required	6. Use PC to re-select location of product if unavailable	7. Make requisition to get required product	8. Give requisition to hi/lo operator
• Interpret directions • Read pick list	• Decision making • Prioritize locations for picking	• Sequence operation	• Read labels pick list/ • Compare to inventory	• Read safety procedures • Read operators manual	• Decision making • Read PC screens	• Write requisition	• Submit information to proper personnel • Follow directions

9. Receive product for hi/lo operator	10. Count product	11. Return extra parts to pick area
• Verify information	• Verify information • Math - real and whole numbers	• Decision making • Compare/contrast against pick list

TASKS

B. Packing

1. Read pick list form	2. Fill order according to pick list	3. Pick up skids	4. Make boxes as required	5. Stuff boxes with packing materials	6. Tape boxes	7. Place boxes on skid	8. Stamp boxes if required
• Read/scan list	• Prioritize	• Decision making • Read procedures	• Follow directions	• Read/follow directions • Decision making	• Read procedures	• Read procedures • Sequence operation	• Sequence operation

9. Count final order for quality control	10. Complete pre-count sheet	11. Make copies of paper work	12. Place paper work on skid	13. Call hi/lo operator to remove skid
• Math - (+, -, x, /), counting (whole numbers) • Verify information • Proofread	• Write pre-count sheet • Proofread	• Sequence operation	• Follow directions	• Submit information to proper personnel • Oral/written communication

C. Hi/Lo Operator

1. Drive hi/lo to area	2. Weigh skid in pounds	3. Fill out weight sheet for each skid	4. Shrink wrap skid	5. Bring packages to staging/receiving area
• Read safety manual • Read machine manual • Follow directions	• Math - read scales (+, -, x, /) • Verify information	• Write weight sheet	• Read procedures	• Follow oral/written directions

D. Mailing procedures

1. Check accuracy of scale	2. Use computer for mailing programs	3. Enter zip-code into computer	4. Get appropriate information from source	5. Place products on skid	6. Leave skid for appropriate shipping deliveries	7. Read work order to decide how to mail product
• Read scale/gauges	• Read procedures	• Memorization of codes	• Read print-outs	• Follow/read procedure/ work order • Decision making	• Sequence operation • Follow direction	• Read and follow directions

VIII. Maintenance

A. Machine

1. Receive verbal request from supervisor for repair	2. Respond to request	3. Receive details of problem from operator	4. Get tools	5. Adjust machine	6. Get parts	7. Replace parts	8. Test run
• Follow oral directions	• Decision making • Prioritize work duties	• Follow oral directions/ communication • Write report/work order	• Sequence operation	• Read safety manual and machine manual • Interpret schematic diagram of machine	• Sequence operation • Verify parts • Read labels/codes/part numbers	• Write inventory replacement form/order • Decision making	• Decision making • Verify product

9. Readjust if necessary	10. Complete job
• Sequence operation	• Sequence operation • Submit information to proper personnel • Communications

TASKS

B. Kitchen Cleaner

1. Receive dirty equipment	2. Scrape excess materials off equipment	3. Dispose waste into appropriate containers	4. Wash equipment by hand	5. Power wash equipment	6. Return clean equipment	7. Monitor holding tank	8. Retrieve empty drums and totes from hazardous waste area
• Follow safety instructions • Follow procedure manual	• Follow procedure manual • Follow directions • Read hazardous waste procedures	• Read labels • Write labels • Read/follow procedures	• Sequence operation	• Follow directions	• Follow directions	• Follow procedures • Communication	• Read/follow safety instructions • Read/follow hazardous waste procedures

9. Label hazardous waste drums and totes	10. Pump liquid wastes into drums and totes	11. Transfer hazardous waste to waste holding area
• Write labels • Proofread	• Follow directions	• Follow directions

C. Physical Plant

1. Receive maintenance request from supervisor	2. Fill out time card	3. Evaluate problem	4. Give order to repairman	5. Get tools/equipment	6. Get parts from maintenance cage	7. Order appropriate parts if necessary	8. Update inventory
• Interpret directions from supervisor	• Read/complete/write time card • Multiply to determined time (+, -, x, /)	• Decision making • Prioritize job	• Oral/written communication	• Sequence operation • Decision making	• Read labels/codes/part numbers • Discuss operation • Compare parts	• Write/complete order form	• Write/complete inventory control card • Complete requisition

9. Use proper safety procedures	10. Complete job	11. Report verbally to supervisor	12. Fill out time card
• Read safety manuals • Follow directions	• Follow directions	• Oral communication • Submit information to proper personnel	• Math (+, -, x, /) • Verify accuracy (proofread)

D. Porter

1. Separate trash	2. Recycle trash	3. Load dumpster	4. Load compactors	5. Report to supervisor	6. Get list from supervisor	7. Get equipment and forktruck	8. Drive forktruck
• Decision making	• Decision making • Follow/read recycling procedure	• Sequence operation	• Follow safety procedures • Follow directions	• Oral communication • Submit information to proper personnel	• Read list • Prioritize list	• Follow safety procedures • Follow directions	• Follow safety procedures • Follow directions

9. Follow safety procedures	10. Request supplies as needed	11. Clean and maintain property as required
• Read safety manuals (OSHA)	• Write/complete forms (supply requisitions)	• Follow directions

VOCABULARY

Acrylic - paint made with latex and resin
Binder - a machine that makes pads
Cage - waste hold area
Change over - switch machine for different orders
Change parts - spare parts used to reduce changeover time
Cherry picker - used for inventory stand on it to reach upper level
Collating - putting groups of things together
Edger - blade in hopper to mix paint
Folders - two pieces of metal in binder that fold tape on pad
Freeze stability - put samples in freezer to check reaction to cold
Grumtine - liquid to mix with paint to thin paint
Hair dryer - lift labels off racks or dry things
Hand jack - pick up skids
Heat stability - put samples in oven to check if there are problems with heat (accelerate aging of paint)
Hi/Lo operator - forklift operator
Hobart mixer - mixer with pot to mix paint
Hoover miller - used in lab to grind materials to get small sample for oil colors
Hopper - place to put paint
Jog pad - even out spiraled paper
Kit picking - detailed list of raw materials in location
Kitchen - part cleaning area
Linseed oil - oil to mix with oil paint to give it gloss
Manifest - shipping information that comes with products received
Master pack - pre-determined quantity sent to distributor
Matt medium - reduce gloss mixed with paint
Medium - artists use it as an enhancer to make paint project
Milling - machine to mix and process paint
Mineral spirits - solvent used to clean machine
Pallet - skid to hold materials
Paper Counter - machine to count paper
Perforation - for hole puncher
Pot - partially processed material in a pot
Presser machine - makes pastel sticks
Push wheel - wheel to keep tape flush with the pad
Quality Control (QC) hold - hold until quality control can check
Retain - control sample kept in lab
Rework - do work over that was not right
Scrap - wasted materials
Sets - complete product made up from several individual products
Skids - platform to hold materials
Spatula - tool to put paint in hopper
Specific gravity - relative weight of a substance compared to water
Stagger - push materials out of alignment
Staging area - in process material holding area
Totes - waste liquid holding vessel
Vat - container to hold paint
Viscometer - measures density of paint
Wash - comparison versus control; used for water colors

TRAITS AND ATTITUDES

Accurate
Clean
Efficient
Fast Worker
Flexible
Good attendance
Good attitude
Good color vision
Good communication
Good comprehension
Hard working
Neat
Organized
Patient
Prompt
Smart
Team player
Understanding

TOOLS AND EQUIPMENT

Adhesion testers
Adjustable wrench
Allen wrench
Binder
Brush/Broom
Calculator
Carts
Cherry picker
Computer/Typewriter
Cutter machine
Cutters
Dispersion gauge
Dust masks
Filling machine
Fork lift
Gloves
Grinder
Hair dryer
Hammer
Hard hat
Hi/Lo
Hole puncher
Hot plates
Knife
Label machine
Lifts
Light box (color matching)
Magnetic stirrers
Microscopes
Milling machine
Mineral spirits
Mixers
Muller
Oven
Paint scoop
Paper counter
Phone/Intercom
Pliers
Presser machine
Refrigerator
Safety glasses
Scales
Scissors
Screwdriver
Shrink wrap machine
Socket wrench
Spatula
Spiral
Tables
Tape machine
Thermometers
Towel
Versate machine
Viscometer

KNOWLEDGE AND SKILLS

Knowledge of all company machines
Chemistry
Decision making
Filling
Finding locations
Health and safety
Instrument reading
Manual dexterity
Math - +, -, x, /, weights, %, measurements
Milling
Pastel
Problem solving
Read and write English

WORKPLACE SKILLS PROJECT

DACUM PROFILE FOR CHEMICAL PLANT OPERATORS

RHEIN CHEMIE CORPORATION

DACUM PANEL MEMBERS

John Cohen
Mill Operator

Bob Fries
Mill Operator

Larry Jordan
Mill Operator

Jamie Rodas
Mill Operator

Walt Rodenberger
Mill Operator

DACUM FACILITATOR
Nunzio Cernero
Organization Development Specialist
Mercer County Community College

RECORDER
Michael Tovino
Curriculum Developer
Elaine Weinberg
Director, Workplace Skills Project
Mercer County Community College

DATE
June 9 and 11, 1992

LOCATION
Mercer County Community College

Chemical Plant Operator

The **Chemical Plant Operator** runs machinery, mixes chemicals, packs finished product and maintains a safe, clean environment.

TASKS

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10
I. LEADMAN										
Set up shift	Review schedule and priority (ies)	Scan work area for safety	Inspect machinery	Review attendance	Assign jobs	Retrieve proper lot number	Make proper packing stencil			
Recordkeeping	Channel paperwork (operators)	Record accuracy of measuring instruments	Tag skids	Prepare manpower forms	Handle material (tracking forms)	Prepare accident forms	Prepare shift summary(ies)			
Shift supervision	Verify accuracy of measuring instruments	Set up break/lunch rotation(s)	Assist others if needed – utility man	Perform basic maintenance	Train new operators (where applicable)	Render basic First Aid, if needed				
Coordinate with others	Communicate with production or shift manager	Communicate with leadman from other shifts	Communicate with lab	Communicate with operators						
Housekeeping/safety	Oversee cleaning of work area	Oversee cleaning of personal protection equipment	Oversee cleaning of tools							
II. MILL OPERATOR/BANBURY OPERATOR										
Safety check	Scan work area for safety	Test fire alarm	Test brake – Mill	Read formulation card	Gather other protective equipment	Test personal equipment				
Equipment check	Check cooling system	Check temperature gauge								
Material check	Match code/resource number to formulation card	Match weight to formulation card	Inspect for contamination	Report differences to lead man and laboratory	Correct errors					
Mix raw materials	Weigh materials	Make rubber and binder	Add materials to Mill and Banbury	Operate machine according to formulation card	Sample (lab) – Mill	Drop – Banbury	Sheet off – Mill	Extrude – Banbury	Sample (lab) – Banbury	Pack
Keep records	Complete safety form	Complete batch form – Mill	Complete batch form – Banbury	Complete housekeeping form						
Housekeeping/safety	Clean work area	Clean personal protection equipment	Clean tools	Clean seals, track, and door – Banbury						
Clean up	Lock out machine	Identify type of clean up	Prepare for clean up	Complete clean up						
III. RUBBER COMPOUNDER										
Collect data	Talk with lead man	Read production schedule	Read formulation card	Evaluate inventory	Request more inventory, if needed (first shift)					
Compounding	Inspect "Zapper"	Remove plastic covering from rubber	Cut rubber and then weigh rubber	Set up materials, if required	Place materials behind machines					
Recordkeeping	Complete batch-count form	Complete housekeeping form								
Housekeeping/safety	Clean work area	Clean personal protection equipment	Clean tools							
IV. EXTRUDER OPERATOR										
Equipment check	Verify temperature (see formulation card)	Inspect cooling valves	Verify screen size	Inspect dust collectors	Verify proper dies					
Operate machine	Set extruder speed	Adjust line speed	Adjust cutter	Change screens						
Housekeeping/safety	Clean work area	Clean personal protection equipment	Clean tools							
V. PELLETIZER OPERATOR										
Equipment check	Verify temperatures (see formulation card)	Inspect water valves	Inspect blades	Inspect dust collectors	Inspect level of water tank	Inspect dryer	Inspect Wittie (strainer)	Test run the machine		
Operate machine	Look for contamination	Feed material	Inspect properties of pellets	Adjust blades as needed						
Housekeeping/safety	Clean work area	Clean personal protection equipment	Clean tools							

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Chemical Plant Operator

The **Chemical Plant Operator** runs machinery, mixes chemicals, packs finished product and maintains a safe, clean environment.

TASKS

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10
VI LABORATORY										
Set up computer	Contact lead man for data	Enter data into computer	Read product card	Identify required test						
Set up equipment	Set up elasticity test	Pre-weigh master batch, if needed	Set up Rheometer	Pre-weigh (g) colors	Set up "Mooney" (viscosity) machine					
Inspection (dispersion, gravity) etc.	Get samples	Complete dispersion test	Perform elasticity test	Approve or disapprove batch	Run other tests, if necessary	Save sample	Number and label sample			
Computer recordkeeping	Log in time of batch	Record test results	Record box count							
Housekeeping/safety	Clean work area	Clean personal protection equipment	Clean tools							
VII UTILITY MAN										
Set up raw materials	Review production schedule(s)	Confirm raw materials available in plant	Request raw materials as needed	Position materials at machines	Collect unused materials	Weigh unused materials	Ship unused materials to warehouse	Unload truck		
Recordkeeping	Consult **Prism** system	Prepare forms for hazardous wastes								
Handle waste	Collect waste materials	Separate waste materials	Discriminate hazardous from non-hazardous waste	Contain and label waste materials	Weigh waste containers	Store waste materials appropriately				
Housekeeping/safety	Clean lunch and locker rooms	Clean personal safety equipment	Clean white caps	Wash protective garments	Clean Vortex					
Run errands	Obtain items from varied sources (e.g. warehouse, offices, mailroom)	Obtain items from outside sources								
VIII. PACKER										
Identify proper material	Pick proper box sizes	Pick proper tape color	Pick proper hazard labels	Review formula card/schedule for added packing instructions						
Pack	Test scale	Stencil boxes	Assist Mill operator in removing batch	Inspect product	Weigh product	Pack product	Load skid	Move to staging area	Pack, mark box, store in proper location	
Recordkeeping	Complete packing sheet	Complete housekeeping form								
Housekeeping/safety	Clean work area	Clean personal protection equipment	Clean tools							
IX. WAREHOUSE										
Receiving	Obtain purchase order	Confirm details of shipment against purchase order	Unload truck	Store in appropriate location(s)	Record location(s)					
Transfer materials to plant	Discuss priorities for day	Read materials list	Load truck	Operate truck	Obtain signature for transfer sheet at plant					
Transfer material from plant to warehouse	Load truck	Complete transfer sheet	Operate truck	Unload truck	Store materials appropriately					
Shipping	Read "pick" ticket	Locate product	"Pull" product(s)	Move product(s) to staging area	Assembly order	Stencil order to proper code	Wrap order	Match order to Bill of Lading	Load trucks	
Housekeeping/safety	Clean work area	Clean personal protection equipment	Clean tools							
Recordkeeping	Maintain **Prism** system									
Forklift	Drive materials to appropriate location									

BEST COPY AVAILABLE

TRAITS AND ATTITUDES

WILL BE:

- Adaptable to methods, techniques
- Accepting of working environment
- Conscientious
- Cooperative
- Courteous
- Eager
- Flexible
- Open-minded
- Organized
- Self-checking
- Self-pacing
- Team worker
- Willing to accept dangerous work, environment

TOOLS AND EQUIPMENT

- Air Chisel
- All Wrenches
- Broom
- Calculator
- Circular Saw
- Clip Boards
- Computer
- Crowbar
- Drill
- Forklift
- Hammer
- Knives
- Packing Material
- Packing Table
- Pipe Wrench
- Razor Knife
- Scales
- Scraper
- Screwdriver
- Shovel
- Squeegee
- Tape
- Vise Grip
- Wire Brush
- Writing Instruments

SAFETY EQUIPMENT

- Boots
- Booties
- CO_2 Extinguisher
- Eye Wash
- Fire Extinguisher
- Glasses
- Gloves
- Respirator
- Sleeves
- Shower
- Tarbon Cream
- White Cap
- White Suits

KNOWLEDGE AND SKILLS

READING/WRITING

- Forms
- Reports
- English as a Second Language
- Labels
- Terminology (e.g., chemicals and plant terms)

MATH

- Addition
- Multiplication
- Percentages (decimal points)
- Subtraction
- Division
- Pounds and Ounces
- Grams/Metric System

APTITUDE

- Communication Skills
- Comprehension
- Critical Thinking
- Decision Making
- Hazardous Materials
- Hygiene Rules
- Instruments
- Lotus 1-2-3
- Mechanical
- Perform Under Stress
- Problem Solving
- Read Charts
- Safety Rules
- Self-Checking
- Wordperfect

WORKPLACE SKILLS PROJECT

CURRICULUM
RHEIN CHEMIE CORPORATION

CHEMICAL PLANT OPERATORS

DACUM PANEL MEMBERS

Ellen Benowitz - Faculty, MCCC
John Cohen – Mill Operator
Wayne Eggert - 2nd Shift Supervisor
Red Hummel - 3rd Shift Supervisor
Larry Jordan - Mill Operator
Michael Tovino - Curriculum Developer

DACUM FACILITATOR

Walter A. Meyer
Director, Center for Training and Development
Mercer County Community College

RECORDER

Elaine Weinberg
Director, Workplace Skills Project
Mercer County Community College

DATE

June 17, 1992

LOCATION

Mercer County Community College

The **CHEMICAL PLANT OPERATOR** runs machinery, mixes chemicals, packs finished product and maintains a safe, clean environment.

The curriculum will include:

READING

GOAL:

The Chemical Plant Operator will be able to recognize, comprehend and interpret all written materials necessary to successfully carry out job responsibilities.

TOPICS:

- Compare and contrast information on formulation card and other locations
- Interpret company terminology
- Read personal protection cards
- Read schedule ("Pick" tickets)
- Read materials/supplies needed
- Read production schedules (to keep areas supplied)
- Read scales (digital, decimals to 2 places)
- Discriminate numeric and alphabetic differences
- Follow directions
- Determine similarities and differences on sheets
- Scan sheet
- Read MSDS materials
- Verify resource/code number
- Read and interpret company communication

WRITING

GOAL:

The Chemical Plant Operator will be able to use proper punctuation, spelling, and grammar to complete correctly any forms, routine paperwork, and special reports.

TOPICS:

- Complete stencils with initials, weight, Q.C. number
- Complete notetaking (e.g., problems on floor)
- Complete accident reports
- Prepare charts, stencils, forms, tracking forms (detailed)
- Spell correctly
- Classify and label waste material

COMPUTATION

GOAL:

The Chemical Plant Operator will be able to calculate the amount of supplies needed to mix compounds, weigh and measure waste materials, interpret word problems, complete information charts, interpret graphs, and use decimals and metric measures as needed.

TOPICS:

- Calculate amount of supplies
- Calculate number of boxes
- Weigh and measure waste material
- Calculate decimals
- Calculate using metric system - kilograms and grams
- Calculate waste proportion (certain amount waste per run)
- Complete charts, stencils, forms
- Perform word problems
- Add/subtract/multiply/divide
- Interpret graphs
- Use analog and digital gauges

TECHNOLOGY IN THE WORKPLACE

GOAL:

The Chemical Plant Operator will be able to comprehend chemical processes and procedures, understand and apply safety procedures in the workplace, read gauges, inspect cooling lines, equipment, raw materials and finished products, and separate and contain hazardous and nonhazardous waste.

TOPICS:

- Interpret temperature gauge
- Interpret fahrenheit
- Understand MSDS chemical reactions
- Recognize hazardous/nonhazardous waste materials
- Select proper waste containers
- Select proper fire equipment
- Check dispersion/elasticity
- Determine properties of elasticity and viscosity
- Determine proper cleaner for each chemical
- Predict chemical reaction
- Inspect water line

ORAL COMMUNICATION

GOAL:

The Chemical Plant Operator will verbally and nonverbally interact with workers at all levels of the organization, and develop skills in the areas of active listening, giving and receiving instructions, discussing work/job needs/requirements, and perform as a team.

TOPICS:

- Listen, ask questions (supervisors, warehouse co-workers)
- Tell workers what jobs to do (give directions/instructions)
- Communicate with supervisor (verify changes/material/process)
- Communicate variations of procedures to workers
- Oral communication of changes (e.g. safety)
- Communicate basics of the job
- Communicate with production and shift managers, lab, and leadman from other shifts, peers
- Communicate with leadman or shift supervisor for supplies

PROBLEM SOLVING

GOAL:

The Chemical Plant Operator will be able to state the problem, identify and test alternatives, select the best solution, implement action and evaluate results.

TOPICS:

- Make hypotheses/draw conclusions
- Decision making (priorities, materials)
- Set shift schedules
- Check and correct weight differences
- Make visual discrimination of contamination in bags
- Adapt procedures to immediate circumstances/improvise
- Judge validity of formulation cards
- Determine how to separate waste
- Make visual check of pellets for specifications and contamination

PROBLEM SOLVING

GOAL:

The Chemical Plant Operator will develop the input/output skills necessary to effectively use the computer system.

TOPICS:

- Keyboarding skills
- Data entry skills
- **Prism** system
- Print/store hard copy

ENGLISH AS A SECOND LANGUAGE

GOAL:

The Chemical Plant Operator will be able to speak, understand and communicate in English in order to function effectively, efficiently and safely in the workplace.

TOPICS:

- Follow English directions
- Communicate problems in English
- Write/read English

NOTES

P. R. I. D. E.

DACUM
SETCO, INC.
PRODUCTION

DACUM PANEL MEMBERS

Mary Edgar - Utility
Joy Gallaher - Packer
Jerry Gordon - Group Leader
Reuben Mentee - Mixer/Grinder
Margaret Mills - Packer
Kathi O'Connell - Supervisor
Theresa Pope - Utility
Andy Rice - Group Leader

DACUM FACILITATOR

Raymond Procaccini
Curriculum Developer, MCCC

RECORDERS

Elaine Weinberg
Director, Workplace Skills Project, MCCC

Lorna Burt
Senior Education Specialist, MCCC

DATE

December 21, 22 and 23, 1993

LOCATION

Setco, Inc.

The **PRODUCTION DEPARTMENT** works together to manufacture a total quality product. They produce plastic bottles by molding resin into a finished product for distribution to customers.

I. PACKER

TASKS →

A. Job Preparation

1. Follow G.M.P.	2. Get safety equipment	3. Get shift information from previous packer	4. Check board for work assignment	5. Read pack pattern instruction	6. Insert liners into boxes	7. Place box on packing stand
• Read employee handbook • Read posters, memos, bulletin boards • Read display board • Listen to oral report from supervisor • Listening skills - crew meeting; shift meeting	• Read employee handbook • Read MSDS sheets • Read safety bulletin board • Listening skills - crew meeting; shift meeting	• Verbal communication with packer and group leader • Visual samples of product on machine • Listening skills with group leader • Read bottle history defect list, computer printout	• Read machine number, job, clean-up orders • Oral communication - rework directions and clean-up • Listening skills - supervisor will clarify and direct packers • Visually sample rework problems	• Read words, symbols, diagrams • Counting/verification - match patterns • Copy, imitate, evaluate, decide about packing patterns	• Locate liners • Estimate displacement of air in liner • Read letter on box - this gives the size of box • Compare/verify to pack pattern	• Read packing pattern • Verbal check if problems/ defects

B. Packing

1. Check bottles for defects	2. Pack according to pack pattern	3. Drape liner over bottles	4. Remove box from packing stand	5. Place box on floor
• Visual observation for defects • Problem solving to check bottles on table for origin of problem • Decision to put aside bad bottles • Communicate to group leader	• Read diagram with instructions • Check letters on box against pack pattern	• Decision to go to next step • Decide if job is alright	• Decision to go to next step	• Follow procedures

C. Rework/Internal Hold and Red Tag Hold

1. Obtain internal hold tag or red tag from appropriate sources	2. Observe tags and materials for defects	3. Remove defected items from box	4. Reselect bottles	5. Discard rejected bottles	6. Repack good bottles	7. Drape liner over bottles	8. Remove box from packing stand
• Verbal instructions from group leader or supervisor • Listening skills • Read tag	• Read tag for information on defect • Read symbols on stickers for information on defect • Visual example of defect by group leader or supervisor	• Complete and go to next step	• Visual check and decision making on good versus bad bottles	• Decide through visual check • Ask questions for clarification if the specific defect wasn't pointed out	• Check letters on box against pack pattern • Visual check of pack pattern • Visual check of bottle as you pack	• Visual check for dust/dirt • If O.K., decide to drape • Decision making	• Decision that job is done

D. Housekeeping

1. Pick up bottles from work area	2. Sweep work area	3. Assist others with their housekeeping	4. Prepare trash for disposal	5. Separate material for recycling or contamination	6. Cooperate with others to maintain cleanliness of plant
• Verbal instructions from supervisor or group leader - listening skills • Visual check of area • Decide to throw bottles found into white bin • Decide if problem is serious • If so, report to group leader or supervisor	• Visual check of area to sweep • Decide if other cleaning is necessary	• Verbal communication/ request from group leader or supervisor • Observe if help is needed	• Observe if trash liner is there • If not, insert liner	• Visual check and decide where to put material • Verbal instructions on how to discriminate	• Observe if help is needed • Listening skills with group leader or supervisor

II. Mixer/Grinder

A. Job Preparation

TASKS →

1. Follow G.M.P.	2. Get safety equipment	3. Get information from previous shift	4. Order material	5. Clean filters	6. Bring materials from warehouse	7. Replenish gaylord with virgin materials	8. Send materials through pipes to machines
• Read employee handbook • Read posters, memos, bulletin boards • Read display board • Supervisor orally reports to packers • Listening skills - crew meeting; shift meeting	• Read employee handbook • Read MSDS sheets • Read safety bulletin board • Listening skills - crew meeting; shift meeting	• Communicating equipment needs with/to supervisor (verbally) • Visual samples of perfect on machine • Listening skills with group leader • Read bottle history defect list, computer	• Change packer to mixer/ grinder and/or supervisor • Listening skills from group leader	• Manage time • Prioritize when/what machine to do next	• Read raw material tag and prepare order • Decision making - amount of material to bring forward at one time	• Prioritize and decision making and reading - raw material tag • Write raw material tag	• Read so that right resin gets to right machine

9. Replace consumed materials	10. Complete necessary paperwork
• Prioritize and decision making and reading - raw material tag • Write raw material tag	• Read material transfer form and raw material tag • Read, write, compare code numbers to resin, regrind, color • Writing weight in lbs. on MTF and RMT • Read, write scrap report

B. Calculate Colors/ Percentages

1. Close regrind valve	2. Use stopwatch to time sample production	3. Obtain sample of virgin material/color	4. Take sample to table	5. Weigh sample color and resin	6. Compare weight with percentage of customer requirement	7. Complete necessary paperwork
• Follow procedures	• Read calibrations on stop watch • Use time in seconds	• Follow procedures	• Follow procedures	• Weigh scale is in grams	• Use calculator to formulate color percentage (+, -, x, /)	• Chart color percentage • Graph/plot result of "white" percentage

C. Mix

1. Obtain virgin resin from blender	2. Obtain color from warehouse	3. Weigh resin color	4. Get percentage of mix from supervisor	5. Put mix in tumbler	6. Tumble resin until mixed	7. Describe material on material tag	8. Perform visual inspection to determine when material finished
• Follow procedures	• Follow procedures	• Use scale to weigh in lbs.	• Read and oral communication of % from supervisor	• Follow procedures	• Decision making • Timing at 20 minute intervals (use minutes)	• Write numbers and words	• Decision making through observation

9. Connect vacuum hose from drum to hopper	10. Complete necessary paperwork
• Read numbers to connect right drum to hose	• Write up material tag when mix is complete • Write words and numbers

TASKS

D. Clean Hoppers/ Machine

1. Receive order from supervisor or group leader	2. Disconnect vacuum hose from blender or silo	3. Bring empty drum and pipe to machine	4. Drain hopper	5. Drive platform lift, if required	6. Clear material from vacuum line	7. Connect air hose to machine air system	8. Clean hopper with air hose
• Oral communication of daily duties	• Follow procedures	• Read label to bring drum with correct resin to floor	• Follow procedures	• Read vehicle (information) operation manual	• Follow procedures	• Follow directions	• Follow procedures

9. Clean machine and area	10. Return all equipment	11. Place usable material in blender
• Follow procedures	• Follow procedures	• Decision making on what material can be used again

E. Grind

1. Collect bins from floor	2. Receive instructions from supervisor	3. Weigh bottles	4. Inspect bottles	5. Sort contaminated bottles from bins	6. Weigh and record contaminated bottles	7. Place good bottles in appropriate grinder	8. Clean grinders when breakdown due to overload
• Follow directions • Complete scrap report	• Oral communication	• Use scale and weigh material in lbs. (weight-counterweight style)	• Decide if contaminated bottles in bin	• Decision making	• Use information to write scrap report	• Read grinder to determine material type to be ground	• Follow procedures

9. Complete material tag	10. Write material transfer tag	11. Paint gaylord	12. Re-label gaylord	13. Perform QC check	14. Get supervisor approval	15. Move gaylord to appropriate location	16. Complete necessary paperwork
• Include description, weight, code number, date, signature • Match and fill information in proper area on material tag	• Use proper area to fill out material transfer tag • Write tag to move material to warehouse	• Observe and cover all old words/numbers with paint	• Write form to include code number for resin type, material, weight, date, shift	• Read gauges for temp • Decision making - green sticker is O.K. (red sticker is no good)	• Supervisor initials to move off production floor • Write work if grinder is overloadcd and therefore needs maintenance	• Follow procedures	• List paperwork - material tag, material transfer, work order, label

F. Sorting gaylords

1. Collect full gaylord with contaminated material and preforms	2. Take to grinding room	3. Sort good bottles for regrinding	4. Weigh materials	5. Paint gaylord	6. Label gaylord	7. Get supervisors approval	8. Move to warehouse
• Observe/decide if gaylord is full	• Follow procedures to use electric walk along jack	• Decision making to find uncontaminated bottles	• Use large scale to weigh in lbs.	• Observe and cover all old words/numbers with paint	• Write form to include code number for resin type, material, weight, date, shift	• Communication	• Communication

9. Complete necessary paperwork	10. Write material transfer and material tag
• List paperwork - material tag, material transfer. label	• Fill in proper areas

TASKS

G. Housekeeping

1. Get equipment	2. Pick up bottles from floor	3. Sweep work area	4. Prepare trash for disposal	5. Separate material for regrind, disposal, or recycling	6. Dispose of garbage to warehouse	7. Dispose of empty boxes warehouse
• Follow directions	• Follow procedures	• Follow procedures	• Read label: T = Trash R = Regrind C = contaminated	• Decision making on what is good/bad	• Follow directions	• Read label to put in "cardboard only" bin

III. Utilities

A. Job preparation

1. Follow G.M.P.	2. Get safety equipment	3. Check board for work assignment	4. Get clipboard for S.P.C.	5. Get utility cart	6. Get information from previous shift	7. Gather supplies required	8. Read pack pattern instruction
• Read RMP Handbook • Communicate with supervisor • Read posters, memos and bulletin boards • Listening skills • Read display boards	• Read employee handbook • Read MSDS sheets • Read safety bulletin board • Listening skills - crew meeting; shift meeting	• Read machine number, job, clean-up orders • Oral communication - rework directions and clean-up • Listening skills - supervisor will clarify and direct packers • Visually sample rework problems	• Read numbers (machine) • Visually check if need new sheet • Identify correct sheet • Write information - bottle type, size, resin date	• Follow procedures	• Verbal communication with packer and group leader • Visual samples of perfect on machine • Listening skills with group leader • Read bottle history defect list, computer printout	• Visual check on supplies • Read pack pattern to make sure box size • Decision making • Communicate with stone keeper • Use safe techniques to lift properly	• Read words, symbols, diagrams • Counting/verification - match patterns • Copy, imitate, evaluate, decide about packing patterns

9. Compare labels to sample label
• Read bottle type, type of resin, date M.O. #, box #, code # • Verify with sample

B. Construct box

1. Verify correct letter on box	2. Place box upside down on floor	3. Unfold box	4. Fold small flaps inward	5. Line up folds	6. Tape bottom of box lengthwise	7. Staple box when required	8. Insert partitions if required
• Read letter and verify with pack pattern and bill material • Following verbal and visual instructions of trainer	• Problem solving • Read what's on box • Place it with writing upside down • Visual verification - check for small seal at bottom of box	• Shape cardboard into rectangle	• Verbal instruction – large flaps must be taped together	• Visual/spacial check	• Math – length, width measurement	• Verbal communication from supervisor • Read pack pattern • Decision making - bundles need stapling	• Verbal communication from supervisor • Read pack pattern • Decision making - always in bundle box

9. Flip box over	10. Bend flaps down, if required	11. Determine how box will be filled	12. Place flaps up for tumble pack	13. Place flaps down for robot pack	14. Drape liner over box for tumble pack	15. Insert liner airtight along wall of box for robot pack	16. Place boxes in staging area
• Follow directions	• Decide whether robot or tumble pack • Visual - identify what method is going to be used	• Read pack pattern	• Follow procedures	• Follow procedures	• Visual check and estimation that bottles will fall into box	• Visual/math - line up length of liner to length of box • Verify/match seam • Estimate air displacement liner • Decide on best method to eliminate air • Evaluate results	• Follow procedures

TASKS

C. Finished goods

1. Place empty skid in place	2. Take completed boxes off conveyor belt	3. Inspect bottles for defects	4. Secure plastic liner over finished goods	5. Shake box if tumble packed	6. Place appropriate label on box	7. Tape box closed	8. Place box on skid
• Estimate distance from mat to aisle • Visually inspect skid • Decide whether skid is good or bad • Decision making - open end facing aisle so that pallet can be removed	• Evaluate robot's performance • Visual inspection of packing pattern • Decision making - close or hold box	• Read past history sheet • Visually check for samples or defects in machine • Visual inspection of bottles • Decide how many bottles to check • Verbal written communication	• Decision making - best way to secure liner	• Decision making	• Read label and compare to label sample on machine • Match label to space on box • Visual check if label is straight and in right way	• Follow procedures	• Read pack pattern - pallet size, how many and how to stack pallet • Decision making - how to stack skid • Math - area and space • Count number of boxes per skid

9. Take full skid to QC staging area	10. Get QC approval	11. Remove skids from QC area	12. Secure skid by stretch wrapping	13. Secure skid by string, if necessary	14. Take skid to warehouse staging area
• Visual check for space • Decision making if no space available • Check QC approval on other skids • If approved, put lid on and wrap it	• Visual check - stamp marks on box and put it in warehouse staging • Replace with skill	• Follow procedures	• Read pack pattern • Stretch wrap • Estimate where to place pallet on stretch wrap machine • String - decision making - how tight around boxes • Estimate length needed and area of boxes - math	• Decision making	• Decide where to place • Judge space area etc.

D. Labels

1. Get labels from supervisor	2. Write date, box, number, shift, letter and initial	3. Place label on box
• Read and compare to label sample	• Read and compare to label sample	• Read and compare to label sample • Decision making • Visual check - right label/ right way up/right place

E. Quality Checks

1. Fill out top half of usage sheet	2. Take sample to inspect for defects	3. Match defect with item on form	4. Notify Group Leader of defect with written A.V.O.	5. Write internal hold tag (or group leader does it)	6. Repeat hourly attributes checks	7. Submit paperwork to supervisor
• Read and write type, model, date, machine and number	• Visual inspection/ evaluation and decision making	• Compare contrast	• Written verbal verification	• Read written procedures	• Time management	• Communication

F. Relieve Packers

1. Follow break schedule of packer	2. Place boxes on packing stand	3. Check bottles for defects	4. Pack according to pack pattern	5. Remove box from packing table	6. Secure liner	7. Label box	8. Tape box • place on skid
• Time management • Read schedule	• Read packing pattern • Verbal check if problems/ defects	• Visual observation for defects • Problem solving to check bottles on table for origin of problem • Decision to put aside bad bottles • Communicate to group leader	• Read diagram with instructions • Check letters on box against pack pattern	• Decision to go to next step	• Visual discrimination	• Follow procedures	• Follow procedures

TASKS

G. Alert lights

1. Respond to small red light	2. Monitor machine operator	3. Check for problems on conveyor system	4. Resolve problem if possible	5. Turn on large blue "help light", if necessary	6. Contact Group Leader if necessary	7. Get supervisor, if no response	8. Respond to small blue light
• Read written procedure – (usually job of group leader)	• Training - verbal and visual with group leader or automation supervisor	• Problem solving	• Decision making - fix problem or go to proper person	• Follow procedures	• Communication	• Follow procedures • Communication	• Be specific to utility • Decision making

9. Take off full box or put on empty box
• Follow procedures

H. Rework

1. Obtain internal hold tag or red tag from appropriate sources	2. Observe tags and materials for defects	3. Obtain internal hold boxes	4. Remove bottles from box	5. Reselect bottles	6. Discard rejected bottles	7. Repack good bottles	8. Remove box from packing stand
• Communications • Follow procedures	• Visual discrimination	• Read internal hold tag/ QC red tag • Make decision on course of action • understand results	• Visual inspection • Decision making	• Visual inspection • Decision making	• Visual inspection • Decision making	• Visualization • Math • Decision making	• Follow procedures

9. Secure liners over bottle	10. Re-label box, if required	11. Tape box	12. Place boxes on skid
• Follow procedures	• Writing	• Verify correct label for particular job	• Check different numbers (changed every month)

I. Housekeeping

1. Pick up bottles from work area	2. Sweep work area	3. Mop area, if required	4. Assist others with their housekeeping	5. Prepare trash for disposal	6. Separate material for recycling or contamination	7. Cooperate with others to maintain cleanliness of plant	8. Dispose of empty boxes to warehouses
• Read GMP procedures • "Ownership" of area safety	• Follow procedures	• Follow procedures	• Teamwork	• Follow GMP	• Read chemicals - decide which plastics to gaylord	• Verbal communication • Teamwork	• Follow procedures

9. Remove broken pallets and waste cardboard	10. Mop floor, as needed
• Decision making • Follow procedures	• Follow GMP

IV. Group Leader

A. Job Preparation

TASKS

1. Report to work before regular shift	2. Follow G.M.P.s	3. Get safety equipment	4. Communicate with Group Leader from previous shift	5. Review log book	6. Inspect line	7. Inform previous group leader of improper conditions	8. Write incident report, if problem not resolved
• Verbal - communicate with all levels of organization • Decide if line is acceptable, quality of bottles • Write work orders, if need internal hold tags • Interpersonal skills - talk with other group leader • Negotiate product (hold on side until get more help)	• Read employee handbook • Read posters, memos, bulletin boards • Read display board • Active listening with supervisors • Listening skills - crew meeting; shift meeting	• Read employee handbook • Read MSDS sheets • Read safety bulletin board • Listening skills - crew meeting; shift meeting	• Verbal communication with packer and group leader • Visual samples of perfect on machine • Listening skills with group leader • Read bottle history defect list, computer printout	• Read for information on machines - how ran, quality of product, what to look for (problem) • Decisions on quality, maintenance, repairs • Office politics - interpersonal skills	• Visual comparison (people, machines, oil, work orders) • Decide if line working	• Interpersonal skills	• Describe incident • Spelling, grammar • Date/time - verification, witness, location • Decide, if discipline • Communicate with supervisor • Follow up - find right source

9. Order packaging materials with material transfer form	10. Order liquid colors, if required
• Decide if really need order • Write and fill out forms • Decision - what quantity needed • Verbal communication • Math - estimating number bundles • Tolerances, geometry, trigonometry, multiplication, addition (add all individual orders) • Problem solving	• Decide if really need order, quantity • Write and fill out forms • Read raw material tag • Verbal communication • Math - estimating number bundles to make (small box hold 12-24; 4 bundles x 12 pack) • Tolerances, geometry, trigonometry, multiplication, addition (add all individual orders) • Problem solving • Get work order

B. S.P.C.

1. Inspect bottles for defects	2. Enter attributes into computer	3. Identify defect on machine	4. Identify whether mechanical or process problem	5. Correct process problem	6. Write work order if mechanical problem	7. Get approval from immediate supervisor	8. Submit work order to maintenance supervisor
• Visual inspection • Decision to accept, change, reject • Communication with packer	• PC entry - keyboarding • Memory, if unable to find code numbers	• Read defect list, vocabulary list • Problem solving - visual inspection • Decide why change - call up history • Determine mold problems • Math - caliper (dimensional problem), digital - to 1,840 (no rounding) • Averaging (bottle measured in 2 spots - mean/mode/medium)	• Chemistry - how resin reacts and heat molding • Trouble shooting	• Decision making	• Write form - description and check off • Decide problem • Read SPC chart • Math errors - deviation, process, robot, measures	• Verification • Communication	• Interpersonal skills - verbal explanation

TASKS

C. Machine Operator

1. Follow safety procedures	2. Follow operating procedures	3. Read run sheet	4. Set up machine according to run sheet	5. Purge machine, if color change	6. Perform and submit first article if color change	7. Perform S.P.C.	8. Run job
• Read employee handbook • Read MSDS sheets • Read safety bulletin board • Listening skills - crew meeting; shift meeting	• Read employee handbook • Read MSDS sheets • Read safety bulletin board • Listening skills - crew meeting; shift meeting	• Read for information, specs, compare • Verify compare reference guide	• Read run sheet • Follow directions • Problem solving, if problem occurs	• Verbal communication • Follow directions and know procedures • Problem solving • Chemical information - safety procedures	• Follow procedures	• Read procedure manual • Follow directions • Math	• Follow safety procedures

9. Monitor operation	10. Monitor help lights	11. Secure and clear machine down for preventative maintenance
• Decision making • Problem solving - why errors, help lights • Communication with employees - work with others • Time management • Stress management	• Decision making • Problem solving - why errors, help lights • Communication with employees - work with others • Time management • Stress management	• Decision making

D. Machine Start-up Procedure

1. Read run sheet	2. Purge pan cart	3. Bring pan cart to machine	4. Spray core rods with silicone to prevent resin from binding	5. Start scrap run	6. Determine when ready to run into production	7. Hook up conveyor system	8. Notify packer and utility
• Read for information, specs, compare • Verify compare reference guide	• Verbal communication from supervisor to G.L., to mixer/grinder, to mechanic • Follow directions and know procedures • Problem solving • Chemical information - safety procedures	• Follow procedures	• Math - dimensions	• Decide when bottle ready • Follow written procedures • General knowledge of procedures	• Decision making - quality issue	• Follow procedures	• Communication • Interpersonal skills • Time management

9. Weigh purging	10. Place in gaylord	11. Send reject bottles to mixer/grinder
• Measurement - numbers • Following procedures	• Follow procedures • Read	• Follow procedures • Communication

TASKS

E. Troubleshooting

1. Observe "Help" lights for problems	2. Receive information of problems from supervisor or others	3. Verify type of problem	4. Get tools	5. Correct problem, if possible	6. Write maintenance work order for maintenance problems	7. Write mold work order for tooling problems	8. Assist maintenance or tooling department, as needed
• Problem solving • Communication - verbally • Time management • Stress management	• Oral communication of daily duties	• Problem solving • Decision making	• Knowledge of procedures • Follow procedures	• Mechanic and problem solving • Knowledge of safety procedures	• Write form - description and check off • Decide problem • Read SPC chart • Accuracy (5,006 accuracy) • Math errors - flame (heat) causes deviation, process, robot, technique of measures	• Write form - description and check off	• Interpersonal skills • Communication - written work orders

9. Perform start-up procedures
• Read employee handbook • Read Posters, memos, bulletin boards • Read display board • Supervisor orally reports to packers • Listening skills - crew meeting; shift meeting

F. Line Leader

1. Relay supervisor's messages/inf. to line personnel	2. Oversee others on line	3. Attend production meetings	4. Maintain condition of line	5. Respond to "Help" lights	6. Assist mixer/grinder	7. Assist utilities replace or remove boxes	8. Provide information to other departments
• Verbal communication - label change • Written - work order, job jacket, defects and history of bottle, customers who get red tags	• Interpersonal skills • Time management • Stress management	• Speak at meetings • Organization skills • Problem solving	• Follow procedures, GMP, housekeeping • Verbal/written communication - work order	• Problem solving • Communication - verbally • Time management • Stress management	• Follow procedures • Mechanic • Problem solving • Communication • Interpersonal skills	• Follow procedures • Mechanic • Problem solving • Communication • Interpersonal skills	• Follow procedures • Mechanic • Problem solving • Communication - written verbal • Interpersonal skills

G. Maintain Automation System

1. Make adjustments to conveyor	2. Shut down automation system for preventative maintenance	3. Restart system	4. Adjust sensor eyes on equipment	5. Adjust flamers for proper flame treatment	6. Identify problem with robot	7. Correct problem, if possible	8. Notify maintenance through work order if mechanical problem
• Work order • Problem solving	• Follow procedures • Verbal communication	• Follow sequence	• Work order • Problem solving	• Problem solving	• Problem solving • Trouble shooting	• Problem solving • Trouble shooting	• Written communication

9. Notify process technician if computer program error with robot
• Problem solving • Communication - verbally • Time management • Stress management • Interpersonal skills

TASKS

H. Paperwork

1. Fill out daily Group Leader log book after each shift	2. Print S.P.C. charts	3. Fill out internal hold tags	4. Fill out regular tag accountability forms	5. Complete (liquid) raw material tag	6. Complete line clearance sheets	7. Describe process
• Write	• Knowledge of PC	• Write	• Write description • Problem solving • Justification	• Fill out material transfer tag before/after use • Write tag to move material to warehouse	• Write description • Problem solving • Justification • Knowledge of codes	• Written communication

I. Housekeeping

1. Get equipment	2. Pick up bottles from floor	3. Sweep area	4. Separate material for recycling or contamination	5. Prepare trash for disposal	6. Oversee disposal of garbage to compactor	7. Clean up shavings on injection blow molding machines	8. Notify maintenance of oil leak
• GMP • Safety procedures • Ownership of area	• Safety	• Follow procedures	• Read chemicals - decide which plastics to gaylord	• Follow procedures	• Management	• Follow procedures	• Verbal/written communication • Safety procedures

9. Notify appropriate people of any safety issues
• Verbal/written communication • GMP • Safety procedures - take care of issues immediately

VOCABULARY

Attributes - bottle defects
Automation - converger systems
A.V.O. - avoid verbal orders
Barrel - where resin melted down
Bottle defects - dirty parting line, contamination, bottle lines, folds, holes, material sticking
E.C.R. - form for error cause removal. Send to committee for group to resolve problem.
Extrusion - plastic tubes and molds clamped together to form a bottle
First Article - first good set of bottles coming off machine; sample for Q.C.
Flame treatment - a process in which the product is prepared for labeling
Formula for color percentage - (Weight color) + (weight of virgin)= Sum Total = Color/Sum Total G.M.P. - good manufacturing practice
Gaylord - large box. Used to hold virgin resin.
Hold tag - label explaining type of defect. Contains name, serial number, date, comment and signature
Injection Mold - type of mold in which a semi-solid material is forced into the mold and shaped to that form
Line Clearance Sheet - accountability that all is cleaned/removed from the machine with job code
Material Transfer Form - used to order materials
Molding - forming a shape of a product
MSDS sheet - information written about chemical and their properties; used for safe work environment
Pack pattern - "blueprint" to show example of how to pack box and stack pallet
Packing stand - easel type table that holds the packing boxes
Packing table - table on wheels to hold finished goods
Pallet (skid) - platform used to stack boxes
Performs - first process of a stretch blow bottle
Process - control of the mold, temperature, resin temperature, and injection pressure
Purge - clean barrel of machine of resin
Purge Pan - L-shaped pan used to hold broken down resin from machine
Red tag - QC label that explains why item rejected, type of problem number of defects and box number
Resin = material - All material is called resin.
  PE = Poly Ethylene
  PP = Poly Propylene
  PS = Poly Styrene
  PET = Polyethylene Terephthalate
Resin = virgin
S.P.C. - statistical process control
Scrap Run - when bottles are not up to proper specifications and not fully formed
Shift Letters - used on boxes to identify shift product was packed
  8-4 pm = A
  4-12 am = B
  12-8 am = C
  Swing = D
Stretch Blow - process by which tube-like plastic is shaped into final product form (performs)
Stretch Wrap - similar to plastic film to wrap finished boxes
Tumble Pack - bottles dumped loosely in box
Help Lights-
  Large blue light - controlled by packer/utilities; ex.-machine problem
  Small blue - utility person responds to need; ex.-need boxes/remove boxes
  Large red - sounds machine alarm
  Small red - controlled by group leader/utility; ex.-flame is off, or robot stopped
  Large yellow - need material; -mixer/grinder responds
  Large green - machines with dryer; Group Leader responds

TRAITS AND ATTITUDES

Able to handle stress
Able to lift amounts of weight
Calm
Clean
Common sense
Conscientious
Cooperative
Durable
Flexible
Gets along with others
Good attitude
Good mental condition
Good physical condition
Intelligent
Knows factory etiquette
Manual dexterity
Mechanical
Punctual
Safety conscious
Self empowered
Tactful
Team player
Clean
Efficient
Fast Worker
Flexible
Good attendance
Good attitude
Good color vision
Good communication
Good comprehension
Hard working
Neat
Organized
Patient
Prompt
Smart
Team player
Understanding

KNOWLEDGE AND SKILLS

Knowledge of general physics theory-Vacuum system
Math (+,-,*,∏, spatial relationships, S.P.C.)
Measurement /Weight on scales in pounds, digital readings (grams - for color percentage)
Mechanical
Read and write in English
Safety rules
Understand differently types of resins

TOOLS AND EQUIPMENT

Tools/Equipment
Box machine
Boxes
Calculator
Caliper-digital
Cart
Clipboard
Computer
Drum hand truck
Drum tumbler
Ear plugs
Fork Lift
Goggles
Grinder
Hand lift truck
Knife
Ladder
Long hooks
Mask
Oven
Platform lift
Purge cart
Purge pan
Robots
Safety shoes
Scales
Screw Driver
Stand
Stapler/staples
Stopwatch
Strap Wrapper/Strap wrapper machine
Stripper knives
Tables
Tape gun/tape
Testing rod
Tray
Twine
Vacuum system